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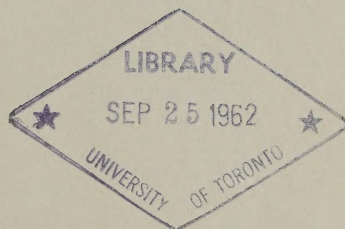
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**GOVERNMENT
ACTIVITIES
IN
THE
NORTH**

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ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT



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GOVERNMENT ACTIVITIES IN THE NORTH - 1961

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MEMORANDUM FOR THE ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT:

GOVERNMENT ACTIVITIES IN THE NORTH - 1961

PREFACE

The Advisory Committee on Northern Development was instructed by the Cabinet on January 22, 1953, to report immediately and periodically thereafter on all phases of development in the Canadian Arctic. A report on government activities was prepared at the time and submitted to the Cabinet. At the seventh meeting of the ACND it was agreed that the report should be brought up to date periodically.

This report, covering activities during 1961 and outlining plans for 1962, has been prepared by the Secretariat from information supplied by the respective agencies.

The report is unclassified, except for the section dealing with the Department of External Affairs. The latter section is not included in the main report but will be distributed separately.

G. W. Rowley,
Secretary.

Department of Northern Affairs
and National Resources,
9 July, 1962.

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TREASURY OFFICE

NORTHERN AFFAIRS AND NATIONAL RESOURCES

Revenues and Expenditures in the Northwest Territories and the Yukon Territory

Fiscal Year 1960-61

<u>Department</u>	<u>Northwest Territories</u>		<u>Yukon Territory</u>	
	<u>Revenues</u>	<u>Expenditures</u>	<u>Revenues</u>	<u>Expenditures</u>
Agriculture	12, 530.87	87, 033.86	46, 116.47	180, 526.18
Chief Electoral Officer	200.00	4, 162.95	-	441.98
Citizenship & Immigration	-	600.00	-	12, 666.88
Indian Affairs	-	579, 217.00	-	1, 090, 270.71
Finance	-	2, 260, 733.83	-	2, 719, 014.70
Fisheries	14, 093.76	284, 004.69	10, 565.88	25, 951.08
Justice	11, 450.69	158, 565.22	26, 762.65	135, 916.19
Labour	-	16, 184.39	-	14, 153.51
Mines & Technical Surveys	419.97	357, 335.15	148.30	280, 124.82
*National Defence	-	3, 188, 399.00	-	7, 095, 023.00
National Health & Welfare	134, 027.00	4, 119, 999.00	575, 396.00	1, 844, 482.00
National Revenue	-	-	3, 148, 254.95	213, 230.27
Northern Affairs and Nat'l Resources	2, 845, 737.47	18, 175, 688.29	312, 764.53	4, 699, 266.17
Northern Canada Power Commission	1, 911, 264.00	4, 587, 022.00	1, 024, 924.00	239, 611.00
Post Office	112, 347.91	668, 201.18	151, 860.42	634, 207.30
Public Printing & Stationery	-	60.50	-	233.38
Public Works	244, 890.00	2, 588, 416.00	145, 897.00	633, 942.00
Royal Canadian Mounted Police	101, 954.73	1, 495, 257.87	42, 506.60	544, 958.34
Soldier Settlement & Veterans' Land Act	-	3, 000.00	-	17, 000.00
Trade & Commerce	1, 771.55	1, 348.80	1, 870.95	1, 076.77
Transport	688, 691.46	9, 730, 712.27	138, 229.98	1, 730, 040.03
Unemployment Insurance Commission	-	-	25.00	47, 606.78
	<u>6, 079, 379.41</u>	<u>48, 305, 942.00</u>	<u>5, 625, 322.73</u>	<u>22, 159, 743.09</u>

ADVISORY COMMITTEE ON NORTHERN DEVELOPMENT

Responsibilities To advise the government on questions of policy relating to civilian and military undertakings in northern Canada, and to provide for the effective co-ordination of all government activities in that area.

Review of 1961 Operations

Reports were made to the Committee on a variety of matters dealing with defence and civil development in the north.

A number of northern problems were resolved by discussion in the Committee, and recommendations were made in relation to the establishment of government policy. Particular emphasis was given to the need for scientific research in the north.

The membership of the Committee on 31 December, 1961, was:

The Deputy Minister of Northern Affairs and National
Resources (Chairman)
The Secretary to the Cabinet
The Under-Secretary of State for External Affairs
The Deputy Minister of Transport
The Deputy Minister of Finance
The Deputy Minister of Mines and Technical Surveys
The Chairman, Canadian Section, Permanent Joint
Board on Defence
The Chairman, Chiefs of Staff
The Commissioner, Royal Canadian Mounted Police
The Chairman, Defence Research Board
The President, National Research Council
The Deputy Minister of Public Works
The Deputy Minister of Citizenship and Immigration
The Deputy Minister of National Health
The Deputy Minister of Defence Production
The Deputy Minister of Agriculture
The Deputy Minister of Fisheries

DEPARTMENT OF AGRICULTURE

Responsibilities Investigations into the agricultural possibilities in northern Canada, and the encouragement of local gardening and farming where feasible. Advisory assistance to other government agencies on matters related to agriculture in the Yukon Territory, the Northwest Territories, and other northern areas in Canada. Study of the biology, distribution, and systematics of northern insects and plant diseases. Soil, botanical, and ecological surveys as required.

Long-term Plans

Continuation of experimental and research work on the Experimental Farms at Fort Vermilion, Whitehorse (Mile 1019), Fort Simpson, Inuvik, and Fort Chimo, and the initiation of work at other centres in the north. Appraisal of agricultural potential based on soil surveys and surveys of native vegetation. Agro-climatic studies on a continuous basis at these places. Continuation of surveys of insects, particularly the biting flies.

Review of 1961 Operations

Experimental work on field and garden crops, beef cattle, and poultry was continued at Mile 1019, Alaska Highway. Experiments included the production of certain vegetable crops and flowers using plastic shelters and mulches essential if they are to be grown satisfactorily in the north. Crops such as tomatoes, corn, peppers, beans, etc., can now be grown to maturity under cheaply constructed crop shelters. Carrying capacity studies of native and seeded pastures were begun. Studies were begun to determine the feed consumption of beef cattle, using the new cattle barn and a feed lot.

At Fort Simpson tests were continued with field and garden crops, which were studied in relation to climatic and soil conditions on the island. A limited number of vegetables were again tested at Inuvik where the permafrost has now receded considerably and there is close to 6 feet of active soil layer. Cabbage, cauliflower, broccoli, and other crops were grown with reasonable success when commercial fertilizers were used.

At False River, near Fort Chimo, work was continued on land cleared during the past two or three years. Some vegetables were successfully grown in plastic-covered greenhouses, cold frames, and in the field. It was found that newly broken land could not be used for two years because the permafrost was too close to the surface.

During the summer a reconnaissance soil survey was made in the area along the Liard River from Fort Simpson to the British Columbia border, and a typical area of brown wooded upland soil was selected on the mainland near Fort Simpson for experimental purposes in the future. Botanists collected plants in the same general area.

Two separate entomological survey parties made general insect collections in the north. Through the co-operation of U.S. Atomic Energy Commission one party collected at Cape Thompson as well as at Unalakleet, Alaska. The second survey was made at Lake Hazen, Ellesmere Island, where entomological collections will be continued next year.

Plans for 1962.

Experiments will be continued at Whitehorse (Mile 1019), Fort Simpson, Inuvik, and Fort Chimo. Research will be continued with beef cattle at Whitehorse. Various native and cultivated pastures will be compared, followed by investigations of methods of winter feeding. At all centres the most important vegetables will be tested in the open and in plastic crop shelters. The use of fertilizers and the role of water will be investigated. The recession of permafrost will be followed at Inuvik and Fort Chimo.

Entomological and botanical collections are being planned for the area around Lake Hazen, Ellesmere Island. One botanist will visit Melville Island to make a botanical study around a small ice cap being investigated by the Polar Continental Shelf Project, and another will join a geological survey party in Northern Yukon under D.K. Norris of the Department of Mines and Technical Surveys. Insect collecting is planned in the area from Tok Junction on the Alaska Highway to Chicken, Alaska, and to Dawson. Another party will undertake a pilot insect survey in the area around Uranium City, Sask.

AIR TRANSPORT BOARD

Responsibilities The licensing of air carriers to operate commercial air services; the economic regulation of air carriers; investigations and surveys relating to the operation and development of commercial air services in Canada; advising the Minister of Transport on matters relating to civil aviation.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

The Board continued to participate actively in discussion and negotiations concerning air transportation services for the DEW Line, ADC sites, and the Mid-Canada Line.

Hearings were conducted on applications to provide commercial air services in the north, and other proposals were reviewed.

The Board, in co-operation with other departments and agencies, began a detailed survey of Canadian Government transportation requirements in the Canadian North, related to the development of the air services required.

Assistance was given to a number of government departments in preparing lists of northern air carriers and air services for the guidance of their officers, and the Board continued to provide information to other interested parties on the availability of air services in the north.

Plans for 1962

Normal planning to meet responsibilities.

CANADIAN BROADCASTING CORPORATION

Responsibilities To provide a radio broadcasting service to the people of the north and to broadcast programs about the north on its networks.

Long-term Plans

To improve the present broadcasting service on local stations, particularly in providing programs in the local Indian or Eskimo languages; and to provide a more adequate shortwave service.

Review of 1961 Operations

The CBC Northern Service opened a new 40-watt AM radio station at Frobisher Bay on February 6, and a new low power relay transmitter, part of the Yukon network, at Mayo on March 24.

Radio Station CFFB, Frobisher Bay, broadcasting in English, Eskimo, and French, became the second station of the CBC Northern Service to conduct regular broadcasts in three languages. Frobisher Bay produced a series of radio dramas in Eskimo in co-operation with the Department of Northern Affairs and National Resources. Subsequently the series was rebroadcast by the Northern Shortwave Service.

On April 1 the network service to Watson Lake, Whitehorse, Elsa and Mayo was raised to the full broadcast quality of 5 kc/s. This was extended to Dawson on October 15, whereupon the station there was converted to a low power relay transmitter. All these stations became part of the Yukon regional network of which Whitehorse is the program centre. Whitehorse provided an adequate and equitable broadcast service to all communities served.

On September 23 CFWH, Whitehorse, became the seventh radio station, of the CBC Northern Service to institute regular broadcasts in an Indian or Eskimo dialect by broadcasting in Loucheux.

The power of CFGB, Goose Bay, was increased on October 14 from 250 watts to 1000 watts to improve radio reception over a wider area.

The individual stations in the north increased and improved their local programming and their contributions to national and regional network programs of the CBC. The national radio and television departments of the CBC produced several programs dealing with activities and events in northern Canada.

Staff and facilities were expanded at the regional offices of the Northern Service in Ottawa and Montreal to provide a more adequate broadcast service to the northern region as a whole. As a result programs specially prepared for northern listeners were introduced into the weekly tape shipments to the community stations in the north and broadcast by the Northern Shortwave Service.

Review of 1961 Operations(Contd)

In October the new radio station operated by the Department of Northern Affairs and National Resources at Fort Simpson began receiving weekly tape shipments from the CBC.

In continuance of the policy established by the Corporation, recruitment of staff for northern stations was made where possible from local communities. To date the Northern Service has given regular staff employment to four Eskimos and one Indian as station manager, producer, announcer/operator, and stenographer. At least seven other Indians and Eskimos broadcast on regular assignment.

Plans for 1962

The following technical improvements are planned: a change of frequency and a new 1000 watt transmitter for CFWH, Whitehorse; the installation of low power relay transmitters at Haines Junction, Y. T. and Cassiar, B. C. to extend the present Yukon network of low power relay transmitters programmed from Whitehorse; the installation of a 40 watt radio station at Uranium City which, when the circuits are completed, will become part of a network of low power relay transmitters linking Hay River, Fort Smith, and Yellowknife, which will be programmed from CFYK Yellowknife.

A study of shortwave antenna facilities at Sackville, N. B., will be conducted with a view to improving the present Northern Shortwave Service transmissions.

Extensive coverage will be given to the Dawson City Gold Rush Festival.

CENTRAL MORTGAGE AND HOUSING CORPORATION

Responsibilities Design of housing, preparation of town development plans, and drafting of planning legislation as requested from time to time by the Department of Northern Affairs and National Resources. Financing of housing under the terms of the National Housing Act.

Long-term Plans

The facilities of the National Housing Act and the services of the Corporation will be made available as required.

Review of 1961 Operations

Lending Activities

Twenty-six houses were financed under the National Housing Act, 23 in the Yukon and 3 in the Northwest Territories. In the absence of loans from private lenders, all dwellings were financed by direct NHA loans from Central Mortgage and Housing Corporation.

The average house built in the North in 1961 has 1,132 square feet of available floor space and cost an estimated \$18,844. The average loan was \$13,867 making the average down payment \$4,978.

Because of higher construction costs in the North, residents of these areas can obtain financial assistance for housing over and above assistance available under the National Housing Act. On November 17 an additional loan up to a maximum of \$2,000, secured by a second mortgage, was made available to borrowers who have obtained a loan under the NHA. The funds will be provided by the Territorial Governments, and Central Mortgage and Housing Corporation will be their agent to approve loans and administer the second mortgages that secure these loans. The interest rate for these loans is currently fixed at 7 3/4% per annum, convertible semi-annually. The amortization term is to be the same as stated in the first mortgage and the total of the first and second mortgages is not to exceed 95% of the value of the property as determined by the Corporation.

Other Activities

In March the Architectural and Planning Division undertook to prepare a plan of overall development for Metropolitan Whitehorse at the request of the Department of Northern Affairs and National Resources. Preliminary information and maps were compiled for a site visit in July and August 1961, at which time a survey of land use was carried out and discussions held with local officials. This information was then analyzed and a series of survey maps and a report prepared as a basis for development proposals for Whitehorse. The development plan, when completed and approved, will act as a control on the future growth of Metropolitan Whitehorse.

On October 25 the Minister of Public Works authorized the Corporation to carry out an investigation of a proposal by the City of Whitehorse and the Territorial Council that a federal-territorial rental housing project of approximately 10 units be built at Whitehorse under Section 36 of the NHA. The Corporation is continuing with its investigation of the merits of this proposal and meanwhile it is understood that the Department of Northern Affairs and National Resources is drafting legislation which would permit the Commissioner of the Yukon Territories to enter into an agreement with the Minister of Public Works under Section 36. If a project is ultimately approved for Whitehorse it will be the first Section 36 project north of the 60th Parallel.

The Architectural and Planning Division was represented on the Advisory Design Committee of the Frobisher Development Group.

Plans for 1962

Work will be undertaken as required from the Department of Northern Affairs and National Resources or by other agencies of the government. Lending activities will continue at a level determined by the demand for and the supply of mortgage funds.

For several years, Central Mortgage and Housing Corporation has sponsored the Ontario Research Foundation in the development of an individual household sewage disposal unit. The system reuses the flushing water over and over and it is hoped that it will eliminate a sewer connection to the house for human waste disposal. It is expected that the initial impact of the sewage disposal unit will be in Canada's northern areas. In co-operation with the Department of Northern Affairs and National Resources, a double, self-contained recirculation unit will be installed this summer at a school in Cape Dorset, Frobisher Bay. Although the test results will not be complete until 1963, it is hoped that this method of sewage disposal will eliminate one of the North's major construction problems.

DEPARTMENT OF CITIZENSHIP AND IMMIGRATION

INDIAN AFFAIRS BRANCH

Responsibilities The administration of the Indian Act, as amended.

Among its many important responsibilities is the social and economic development of the Indian population. The Indian Treaty obligations, the enfranchisement of Indians, and the administration of the estates of deceased or mentally incompetent Indians.

According to the Indian Register, as at December 31, 1961, Indians in the Northwest Territories numbered 4,933, and in the Yukon 1,963.

Long-term Plans

The majority of Indians in the North are still dependent on utilization of renewable resources for their livelihood. The Indian Affairs Branch, will, therefore, continue to develop sound trapping and commercial fishing practices, in co-operation with the Department of Northern Affairs and National Resources and the Department of Fisheries, and will provide assistance and supervision for domestic fisheries.

In co-operation with the Department of Northern Affairs and National Resources, the employment program will continue to focus on the major objectives developing existing employment opportunities for Indians who are qualified, able, and willing to take advantage of them; searching out and developing new employment opportunities in a wider range of activities; training and preparing Indians to enable them to participate more fully in the development of the North.

In the field of education, the Indian Affairs Branch will continue to arrange for the gradual admission of all Indian children in the Yukon Territory to schools operated under the Yukon Territorial Government.

Review of 1961 Operations

In the resources field, progress was made in re-organizing trapping procedures. A start was also made on quality control by teaching Indians improved methods of pelt preparation. Repayable grubstakes were issued in some areas to promote better utilization of resources by enabling Indians to reach and remain in their trapping areas. Supervision of commercial fishing on Great Slave Lake was continued, and of domestic fisheries at Ptarmigan Point, Trout Rock, Lac La Martre, Snowdrift, and Fort Franklin. More than 300,000 pounds of fish for food and dog feed was obtained in the domestic projects.

Freezers for storing domestic supplies of fish, game and buffalo meat were constructed at Fort Smith, Fort Liard, and Teslin.

Indians were assisted in obtaining employment in a number of fields including building, transportation, lumbering, and the operation of hospitals and school hostels. A road clearing project east of Yellowknife provided employment for 130 Indians and a similar program in the Yukon employed a peak of some 120 Indians.

Thirty-six houses of an improved standard were built in many settlements, and some 75 houses were repaired. The Indians took an increasingly active part in the planning, construction, and financing of these homes, thereby assuming a continuing interest in their maintenance and future improvement.

In the field of education, the admission of Indian pupils to the schools operated by the Yukon Territorial Government has continued. Of some 688 pupils attending school, 275 are enrolled in Territorial schools with the balance receiving their education at the Carcross Indian Residential School in the Yukon Territory and the Lower Post Indian Residential School in northern British Columbia. Capital contributions were made towards the Territorial schools at Dawson and Teslin, as well as to the Selkirk Street School and the Christ the King Separate School in Whitehorse. Two hostels operated at Whitehorse with the pupils attending local territorial and separate schools.

With the increase in population and housing needs, additional areas of land have been reserved by the Department of Northern Affairs and National Resources for the use of Indians on the settlements of Fort Franklin, Fort McPherson, Fort Rae, Fort Simpson, Fort Smith, Lac la Martre and Snowdrift. Land was purchased for the Indians from the Roman Catholic Episcopal Corporation of Mackenzie at Fort Resolution and Fort Good Hope.

At Fort Simpson an extension to the water system serving a number of Indians at the lower end of the settlement was completed, and arrangements were made with the Northern Canada Power Commission for the installation of a permanent water line to service the new subdivision area and the new staff residence presently under construction. At Fort Good Hope drilling was continued in an effort to secure an adequate supply of water for Indian homes.

At Fort McPherson a new Agency office and a combination garage and warehouse were constructed by Indian day labour. The water line was extended to a number of Indian homes and heated standpipes were installed with the co-operation of the Department of Northern Affairs.

A detailed study of water and sanitary facilities in the Northwest Territories was undertaken as a preliminary to a more extensive program.

In the Yukon a number of wells were drilled in Indian settlements. Road repairs and maintenance were carried out.

Plans for 1962

Present resources programs will be continued with increased emphasis on quality control and full utilization. It is planned to conduct a training course for Indian Affairs Branch personnel to enable them to give advice and assistance to Indians in an effort to bring about the improved preparation of pelts for marketing.

Indians will also be assisted toward full participation in the commercial fishing industry which has recently been extended to smaller inland lakes. Domestic fishing projects will also be continued.

The road right-of-way project east of Yellowknife is continuing with an Indian labour force of about 150 men. Indians will be placed on other road and government construction projects in both the Mackenzie District and Yukon Territory.

Placement Officers at Whitehorse and Fort Smith will undertake labour force and employer surveys and continue to explore opportunities for both permanent and seasonal employment.

As a result of liaison established with Pine Point Mines and Canadian National Railways, it is hoped that there will be employment of Indians in both the construction and operation phases of these enterprises. Liaison has been established with Canada Tungsten in relation to their property in the Flat River area north of Watson Lake, which is scheduled to go into production by the end of 1962.

A program of vocational training of selected Indians to enable them to participate more fully in these enterprises will be developed in co-operation with the Department of Northern Affairs and National Resources.

The Indian Affairs Branch will contribute financially toward the maintenance of the Skookum Jim Memorial Hall at Whitehorse, constructed in 1961 as a community centre for Indians and persons of Indian origin.

The Indian Affairs Branch is negotiating a capital contribution towards the expansion of the Christ the King High School in Whitehorse. In the immediate future capital contributions will be made for the enrolment of Indian pupils at territorial schools to be erected at Carmacks and Watson Lake.

The boundaries and subdivision of 12 Indian settlements in the Northwest Territories will be surveyed.

A new Agency office at Fort Simpson and warehouses for the storage of supplies at Fort Smith and Aklavik will be constructed. At Fort Providence the warehouse will be extended to provide a small office and sleeping quarters for staff, and similar buildings will be erected at Snowdrift and Lac la Martre in the Yellowknife Agency.

DEPARTMENT OF CITIZENSHIP AND IMMIGRATION

IMMIGRATION BRANCH

Responsibilities Implementation and administration of the Immigration Act and Regulations in the north as elsewhere in Canada, including admission of immigrants, non-immigrants, returning Canadians, and returning residents, and deportation of undesirables. In implementing immigration policies, an active part is played in promoting the development of the economy by selection of suitable immigrants.

Long-Term Plan

Normal planning to meet responsibilities, including a continuous assessment of the opportunities that are suitable for immigrants and will attract them to the northern part of Canada.

Review of 1961 Operations

There were 31 ports of entry in the Territories. One was a full-time Immigration office, six were Customs offices, and the remainder were maintained under an arrangement whereby officers in charge of R. C. M. P. detachments, heads of certain Canadian meteorological stations, and commanding officers of certain R. C. A. F. stations have been designated as Immigration Officers in Charge and Special Inquiry Officers to administer the Immigration Act and Regulations. At these ports of entry, immigration examination was made of 82,515 persons: 29 were immigrants, 11,203 returning residents, 71,272 non-immigrants, and 11 were refused admission.

Twenty-three immigrants established their own businesses, and five immigrants began farming on their own in the Yukon. A considerable number of other immigrants found employment in the north.

The Medical-Welfare Agreement between the federal government and the Northwest Territories, covering assistance to immigrants who become indigent through accident or illness during their first year's residence in Canada, was continued.

Plans for 1962

Similar to 1961.

CROWN ASSETS DISPOSAL CORPORATION

Responsibilities Disposal of surplus Crown assets declared by Government Departments or Agencies operating in the north.

Disposal of surplus U.S. Government-owned property located in northern Canada, under the provisions of Canadian Note 140 dated 28 August, 1961 and United States of America Note 52 dated 1 September, 1961.

Long-term Plans

Normal planning to meet requirements.

Review of 1961 Operations

The Corporation was responsible for disposal of any U.S. Government property located in northern Canada which had been declared surplus before 7 December, 1960. In September, 1961 responsibility for disposal of surplus U.S. Government property was reassumed.

Two representatives carried out inspection and disposal of surpluses in the Yukon Territory on a seasonal basis. Disposals without inspection were carried out in the Northwest Territories.

Plans for 1962

Similar to 1961, with the disposal of surplus U.S. Government-owned property in northern Canada being a major operation of the corporation in the north.

DOMINION BUREAU OF STATISTICS

Responsibilities Procurement and analysis of statistics for the Yukon and the Northwest Territories and their publication in the Bureau's regular reports.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

The Bureau had the co-operation of 42 members of the R.C.M. Police who supervised the taking of the 1961 Census in the Yukon and Northwest Territories. In areas where the population totalled 400 persons or more the R.C.M. Police obtained the services of a civilian enumerator, while in many areas the Police actually served as census enumerator. Some 19 civilian enumerators were employed in the Northwest Territories, and 24 in the Yukon Territory, working in most cases under the supervision of a Census Commissioner, appointed by the Minister of Trade and Commerce.

Vital Statistics for the Yukon and the Northwest Territories were compiled from registrations of birth, stillbirth, marriage, and death supplied by the Commissioner of the Yukon Territory and the Department of Northern Affairs and National Resources. Prior to 1956 the local problems of distance and communications made it impossible to obtain detailed returns early enough to be combined with provincial data for the regular vital statistics report. The statistics were published later as an appendix. Vital statistics data for these areas are now being compiled in similar detail to provincial data, and published in the same manner, in the national total.

Tabulations of certain vital statistics were supplied to the Department of Northern Affairs and National Resources on a routine basis.

The Annual Returns of Hospitals were distributed to the hospitals in the Northwest Territories through the Department of Northern Affairs and National Resources and the Indian and Northern Health Services of the Department of National Health and Welfare. In the Yukon the territorial government distributed and collected the Returns for the hospitals. Annual Returns for the tuberculosis hospitals were handled by the Dominion Bureau of Statistics.

All public hospitals in the northwest territories, 4 general and 6 tuberculosis, submitted data regarding the movement of patients, personnel, facilities, bed capacities, and finances. Nine of the twelve federal nursing stations submitted the same data with the exception of finances. In the Yukon, the two public general hospitals reported all data listed above, while the federal hospital reported all data except finances.

Data from the six tuberculosis hospitals were presented in the annual report "Tuberculosis Statistics".

Data from the public hospitals were published in the Hospital Statistics series of volumes as appropriate.

The Yukon Superintendent reported all cases of notifiable diseases in the territory on a four-weekly basis. Weekly reports covering the incidence of venereal diseases in the Northwest Territory were received from the Alberta Department of Health and the Directorate of Indian and Northern Health Services. These data were incorporated into the Dominion Bureau of Statistics' Annual Report of Notifiable Diseases; in addition, the venereal diseases data were included in the Dominion Bureau of Statistics' Notifiable Diseases Weekly Summary.

Hospitals in the Yukon and the Northwest Territories reported information on tubercular patients admitted, readmitted, and discharged during the year. Beginning in January, a new system of case notification in respect of tuberculosis in the Yukon and the Northwest Territories was instituted, with cards being submitted monthly to the Dominion Bureau of Statistics by the Directorate of Indian and Northern Health Services. The institutional data will be included in the Dominion Bureau of Statistics' Annual Report, "Tuberculosis Statistics". Information from the case notification system formed part of the Dominion Bureau of Statistics' Monthly Reports, "Incidence of Tuberculosis".

In May, the Yukon Hospital Insurance Service requested the Dominion Bureau of Statistics' assistance in tabulating, for the two-year period January, 1961 to December, 1962, all admission-discharge forms of Yukon hospitals - approximately 3,500 forms per year. The Dominion Bureau of Statistics was engaged in carrying out the first stages of this project which involves the coding of the admission-discharge data, key-punching the coded data on specially designed punch cards, and mechanically sorting and tabulating the cards. It is expected to include the resulting tables, in the Yukon Hospital Insurance Service's Annual Reports for 1961 and 1962.

The statistics of cases heard by the Territorial Courts and Police Magistrates' Courts dealing with indictable and summary conviction offences and juvenile delinquency, appeals heard by the Courts of Appeal, the movement of guardroom prisoners, and the police statistics of the R. C. M. Police as reported to the Dominion Bureau of Statistics for the Yukon and Northwest Territories were published.

Since 1955 reports on educational statistics of the same type as used in the Provinces have been collected from the public schools of the Yukon through the Superintendent of Schools at Whitehorse.

The same basic reports on teachers and enrolment have been adopted for the schools in the Territories and these have been collected annually by the Department of Northern Affairs and National Resources beginning with the school year 1959-60. These reports also include one on promotion and non-promotion of pupils similar to that used for the Indian schools, but additional to the report forms used for the public schools of the provinces. Beginning with the school year 1960-61 the public school and the Roman Catholic separate school at Yellowknife reported in the same way as the federal schools.

Preliminary figures on numbers of teachers and enrolment were collected early in the fall by the Department of Northern Affairs and National Resources.

The Department of Northern Affairs and National Resources provided information on expenditures on education including the finances of the Public School Board at Yellowknife. The Roman Catholic Separate School Board at Yellowknife reported finances directly to the Education Division.

Statistics on Elementary and Secondary education in the Yukon and Northwest Territories are now being shown on all publications of the Education Division relative to this field.

Annual statistics on foreign commodity trade through customs ports in the Yukon were published in total for both exports and imports, with monthly details available on request. Statistics on international travel movements through ports in the Yukon were published monthly. Data on commodity trade and automobile movements were recorded by the Department of National Revenue, and compiled by the Dominion Bureau of Statistics, and other travel movements were reported by the Department of Citizenship and Immigration.

For mining firms and manufacturing establishments, statistics on the number of employees, salaries and wages, cost of materials, and the value of production were collected and published.

Food cost surveys were carried out at a limited number of northern settlements as required in connection with the Isolated Post Allowances for federal civil servants.

Financial and other data pertaining to the operations of the liquor authorities of both territories were obtained from the Superintendents of Liquor Control.

Financial statistics of both territories were included in reports of financial statistics of provincial governments and were obtained from the public accounts of both territorial governments. Monthly statements of revenues and expenditures of the Northwest Territories were received quarterly from the Department of Northern Affairs and National Resources and were used in the preparation of annual estimates of national income.

Actual financial statistics of incorporated municipalities in the territories were obtained from the municipal officials therein.

Highway statistics for the Yukon Territory and the Northwest Territories were provided by the Departments of National Defence and of Northern Affairs and National Resources, and the officials of the local municipalities. Also reported by governmental authorities were statistics of motor vehicle registrations, traffic accidents involving vehicles, and revenues derived from licences and taxes arising out of the operation of motor vehicles. Freight and passenger statistics were supplied by common and contract carriers operating within and in and out of both territories.

Statistics of railway operations in the Yukon Territory were provided by the White Pass and Yukon Route railway.

Reports of civil aviation were regularly received from carriers working in the Yukon and Northwest Territories.

Water transportation reports were regularly submitted by companies operating cargo vessels on the Mackenzie River system. In addition vessels entering and leaving the ports of the Northwest Territories reported particulars of cargoes loaded and unloaded.

Statistics of the generation and distribution of electric power in the territories were supplied by private firms and the Northern Canada Power Commission. Data of capability and load were obtained from the producers of power, while statistics of meters were furnished by firms engaged in the distribution of power. Information on different types of prime movers and generators was collected for the year 1958 for both territories and published in a new report. This survey is to be repeated for 1961 and thereafter at five-year intervals.

Telegraph and cable statistics for the Yukon Territory were obtained from the C.N.R. Telegraphs, Montreal. Telephone statistics were provided for both territories by the Yukon Telephone Syndicate Ltd., and the Bell Telephone Co. of Canada. The Yellowknife Telephone Co. has not reported to date.

Oil pipeline statistics for the Yukon Territory were reported by the Alaska-Yukon Pipelines Ltd., and the Yukon Pipelines Ltd.

Employment and payrolls of the Government of Canada and its Crown corporations, actually carried on in the Yukon and the Northwest Territories, were reported to the Bureau each month by the responsible governmental departments and Crown corporations and obtained from official documents of the Civil Service Commission, the Treasury Board, and the Privy Council.

The government of the Yukon Territory provided monthly statements of their employment and payrolls on a quarterly basis, and this is being extended to cover the government of the Northwest Territories.

Personal income for the Yukon and the Northwest Territories was included in the National Accounts, Income and Expenditure. In 1960, it was \$48 million out of \$27,442 million, i.e., about one-fifth of one per cent of Canadian personal income.

Calculations of gross national product per capita for Canada were made for certificates submitted to the Yukon and the Northwest Territories respectively by the Dominion Statistician as required for the Taxation Agreements.

Net value of commodity production data were available up to 1959 from 1926 for the fishing, trapping, mining and electric power industries, from 1939 for manufacturing, and from 1940 for forestry.

Monthly data on employment, payrolls, and man-hours were collected from a few industrial establishments in the areas engaged in mining, construction, transportation, storage and communication and catering, and a few in manufacturing. Statistics for these areas were not published separately, but were contained in the Canada figures in "Employment and Payrolls" and "Man-hours and Hourly Earnings".

Data were obtained on the numbers and values of pelts taken in the regions for the fur season 1960-61 (June 1 - July 30). The number of pelts exported from the Northwest Territories was provided by the Deputy Commissioner of the Northwest Territories, and price per pelt data were obtained from the Hudsons Bay Company. The number of pelts exported from the Yukon was provided by the Commissioner of the Yukon Territory, and price per pelt data obtained from Messrs. Taylor & Drury Limited of Whitehorse, Western Canadian Fur Auction Sales Ltd., of Vancouver, Little Bros. Fur Sales Agency of Vancouver.

Plans for 1962

It is likely that in 1962 all schools in the Northwest Territories will report their enrolment by age, grade, and sex as of September rather than in January as is being done at present. This will bring the Territories in line with the practice in the Yukon and most of the Provinces.

Comparative food cost surveys will be undertaken at a large number of northern locations where federal civil servants are stationed. The results of a study of domestic fuel and utility costs of these personnel are also expected during the year.

The Bureau will participate in a review of the vital statistics legislation and registration procedures in the Northwest Territories.

Plans will be made to obtain data on municipal government employment and payrolls.

ELDORADO MINING AND REFINING LIMITED

Responsibilities Maintenance, on a caretaker basis, of a shut-down mining plant at Port Radium, on the southeast shore of Great Bear Lake.

Long-term Plans

None apart from continued maintenance of the plant at Port Radium.

Review of 1961 Operations

The company discontinued the mineral exploration programme in the Great Bear Lake area which had been started in 1959.

Plans for 1962

None.

DEPARTMENT OF FISHERIES

CONSERVATION & DEVELOPMENT, AND INSPECTION SERVICES

Responsibilities Conservation, protection and development of fisheries through enforcement of the Fisheries Act, Fish Inspection Act, and their regulations.

Long-term Plans

To encourage the development of commercial and domestic fisheries wherever conditions are suitable, having regard to markets, transportation, and other factors. To promote greater utilization of fishery products by inspection and assistance in the development of technological processes to obtain consistently high quality. To conserve and maintain the desirable fish populations by application of other conservation measures whenever necessary.

Review of 1961 Operations

The Department's establishment at Hay River continued to maintain its close control over the major fishery in Great Slave Lake. There was, in addition, great expansion of activity throughout the Territories in collaboration with the Department of Northern Affairs and National Resources in their efforts to expand sport and commercial fisheries. These efforts included, in addition to certain relatively small fisheries and marine mammal programmes, substantial fisheries at Frobisher Bay, the mouth of the Mackenzie River, and Cambridge Bay.

The patrol vessels "Marila" and "Mareca" carried out regulation enforcement in Great Slave Lake assisted by a small fleet of snowmobiles. Here and in other areas extensive use was made of chartered aircraft. The Department's technical personnel concentrated mainly on the problems of the Yukon Territory. The fish facilities in the Whitehorse dam continued to function efficiently. Certain minor pollution problems have been solved. Detailed surveys have been made on additional lakes by Departmental and Fisheries Research Board crews. The Department has worked closely with all oil exploration and survey crews to ensure procedures which will protect fish populations.

In late November, based on the surveys of the Fisheries Research Board, the Department implemented a plan for opening the lakes of the Yukon and Northwest Territories to limited commercial fishing. This is designed in different detail for each territory, but it is planned to make available annually sufficient fish to attract operations. Controls have been arranged to provide current data on the effects of fishing, and to protect the domestic and sports fish supply.

The expansion of the fishery over a wide area has increased the responsibility of the Inspection Service. By adjustment it has been able to continue to ensure that a high quality product is still reaching the markets.

Plans for 1962

The Conservation and Development and Inspection Services activities in 1962 will be similar to those of the previous year yet greatly increased.

An expansion of the commercial fishery can be expected now that the opportunity is available. This means additional effort to collect basic data, much closer collaboration with the scientists of the Fisheries Research Board, increased and wider survey, and closer checking by the officers.

The biologists will concentrate mainly on the Yukon, where increased attention may have to be given to international problems arising out of plans for the lower river. Each project of the Department of Northern Affairs and National Resources involving fish and marine mammals will have to be examined and followed to ensure that the continuing supply is not endangered.

FISHERIES RESEARCH BOARD OF CANADA

Responsibilities Investigations of the marine, fresh-water, and anadromous animal resources of the Canadian Arctic, involving biology and utilization. Study of biological oceanography in relation to these resources.

Long-term Plans

To continue and expand fish and marine mammal studies, and to recommend wise exploitation of Arctic marine and fresh-water resources.

Review of 1961 Operations

Field studies on Arctic char were continued at Frobisher Bay on the Sylvia Grinnell River as a biological check on the commercial, native and sports fisheries there. The commercial export quota of 10,000 pounds was taken in less than a week. No reduction in average size of char was apparent in the catch. Sampling in the spawning areas and from catches from the sea suggests that mature char remain in the parent lakes in a spawning year.

Char studies were begun at Cambridge Bay, Victoria Island, with the initiation of a commercial export fishery based on the stock from the Greiner Lake system. Although this system is not considered able to support a continued commercial fishery, the Ferguson Lake system of the adjacent Wellington Bay supports a more promising fish stock, with a potential sustained commercial take of about 40,000 pounds of char and the same weight of lake trout annually.

Because of the imminent opening to commercial export fishing in the area of lakes Quiet and Laberge in the Yukon, sampling of fishes for growth, food, and parasites, and limnological collections were carried out as basic studies.

The M. V. "Salvelinus" continued exploratory fishing in the Tuktoyaktuk-Liverpool Bay-Jusky Lakes region of the Mackenzie District coastline. Hydrographic stations were occupied and numerous samples collected and examined. True Herring (*Clupea harengus pallasii*) were found in a number of locations, and evidence that spawning is local was obtained. While herring abundance in the inshore areas sampled was not great enough to suggest trawling or seining, a type of weir fishing is considered possible and will be attempted next season.

In the marine mammal investigations, aerial surveys of white whales were made in the Mackenzie Bay area, and of walrus stocks at Coats and Southampton Islands, northern Hudson Bay. In addition routine sampling of harp seals off the Canadian east coast was carried out, and surveys made of grey seals on Sable Island, and of harbour seals in some areas of the Maritimes.

Plans for 1962

An Arctic Archipelago survey of aquatic resources will be carried out during the 1962 season from bases at Resolute, Eureka and the north coast of Banks Island. Supplies and equipment were sent in during the 1961 season.

The biological studies on Arctic char started in the Cambridge Bay region in 1961, will be continued, as will the studies on the lakes in the Yukon where commercial fishing is being permitted.

The M. V. "Calanus" will revisit the Ungava Bay region to compare the productivity of the waters there with the indications of 10 years ago, and to make further studies of cod and seals at Burwell.

The M. V. "Salvelinus" will be used for exploratory fishing in Franklin and Darnley Bays.

Long-term studies on the economics, population dynamics, and availability of Arctic seals will be continued in the Home Bay area from Padloping.

DEPARTMENT OF FORESTRY

Responsibilities To prepare forest inventories and formulate forest management plans for lands administered by the Crown, and to give advice on forest fire protection.

Long-term Plans

To determine the potentialities of the forest resources of the north, and to assist in the preparation of plans for their protection and utilization.

Review of 1961 Operations

Administration Branch (Forest Management Section)

A field party conducted forest management studies in the Watson Lake area and along the Lower Yukon, Pelly, and Stewart Rivers in the Yukon Territory.

The Buffalo River series of forest cover maps were completed and made available for distribution. The cover roughly the area between longitudes 113° and 116° W, and latitude 60° N and Great Slave Lake including Pine Point.

Forest Management Paper #2 "Cull in Balsam Poplar on the Lower Peace River" by W.L. Wallace, and Forest Management Paper #3 "Forest Inventory of the Lower Peace and Athabasca Rivers, Wood Buffalo National Park" by R.G. Ray were published.

Forest cover mapping at a scale of 1 inch = 4 miles began in the Liard River watershed as an aid toward fire protection, to show where more detailed forest cover mapping is justified, and to indicate the forest potential near areas of high mineralization.

A field party completed field observations for a fire danger table applicable in the southern part of the Northwest Territories and Wood Buffalo National Park.

Forest Entomology and Pathology Branch

Officers of the Forest Entomology and Pathology Laboratory in Calgary carried out surveys of the spruce budworm and larch sawfly outbreaks along the Slave, Liard, Nahanni, and Mackenzie Rivers. Most of this was by boat, supplemented by 24 hours of aerial surveys out of Yellowknife.

Officers of the Vernon Laboratory carried out forest insect and disease surveys along the Alaska Highway.

Plans for 1962

Administration Branch (Forest Management Section)

No field work is planned for the Yukon and Northwest Territories, but preliminary forest cover mapping will be done for forest surveys proposed for 1963. Forest cover mapping at a scale of 1 inch = 4 miles will be continued.

Forest Research Branch

One research officer with a student will spend approximately three summer months in the Wood Buffalo National Park studying silvics and regeneration problems of white spruce in cut-over areas.

Forest Entomology and Pathology Branch

Forest insect and disease surveys will continue as in 1961.

DEPARTMENT OF JUSTICE

Responsibilities The administration of justice in the Territories, including the organization and maintenance of territorial courts of civil and criminal jurisdiction; the appointment of judicial officers, Justices of the Peace, Magistrates, Juvenile Court judges, and related personnel; the direction and conduct of court proceedings on behalf of the Crown, including prosecutions under the Criminal Code and the Territorial Ordinances.

Long-term Plans

To improve, develop, and organize the administration of justice in the Territories in such a manner that, at the appropriate time, it may be transferred to the Territorial authorities as an efficiently and effectively working system. The "administration of justice" in this context includes the organization of the courts, the conduct of criminal and civil litigation on behalf of the Crown, and all related matters.

Review of 1961 Operations

Criminal proceedings were conducted by Crown counsel, when necessary, before the respective superior courts, Justices of the Peace, and Police Magistrates, the last-mentioned also acting where appropriate as Juvenile Court judges.

Proceedings which were not held in the larger centres were dealt with by local Justices of the Peace or when appropriate by the Magistrates and Superior Court justices on circuit. The day-to-day administrative duties respecting the courts were carried out by the clerks of the court and sheriffs.

Plans for 1962

To station a senior officer of the Department in the Yukon Territory, and possibly in the Northwest Territories.

DEPARTMENT OF LABOUR

(See also Unemployment Insurance Commission)

Responsibilities Conciliation and other services for maintaining good industrial relations; administration of the fair wages policy, fair employment practices, annual vacations with pay, and female employees equal pay legislation; promotion and administration of the municipal winter works incentive program; sale and administration of government annuities; compensation to government employees for occupational injury or illness; development, promotion, and co-ordination of vocational training programs; surveys of wage rates, hours of labour, and other working conditions.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

Industrial Relations Branch

Five applications from trade unions for certification of bargaining agents for employees of companies in the Yukon and Northwest Territories were investigated, and one industrial dispute involving a company and trade union in the Yukon was mediated. Several complaints concerning vacation with pay were processed.

Eighty "fair-wage" schedules in the Northwest Territories and 26 in the Yukon were established for federal government construction contracts, and 830 recommendations were made for establishing wage rates for prevailing rates of employees of the federal government.

Vocational Training Branch

Advice was given to officials of the Department of Northern Affairs and National Resources and the Yukon Territory on the development and operation of vocational training programs and facilities.

Government Employees Compensation

Claims of federal government employees, regularly working in the Yukon and Northwest Territories, for compensation for occupational accidents or diseases were received, adjudicated, and paid by the Alberta Workmen's Compensation Board, under a federal-provincial arrangement. A total of 573 claims was received and disbursements were \$87,300.

Economics and Research

The Economics and Research Branch conducted two annual surveys - one on wage rates and hours of labour, the other on working conditions - covering 17 establishments in the Yukon Territory, and 25 in the Northwest Territories, one of which was along the DEW Line, and another at Frobisher Bay. The Branch also maintained a file of collective agreements covering employees in these areas.

Annuities

No statistics are available on the number of government annuities sold in the North but it is believed to be small. Sales and other business relating to government annuities are carried out by correspondence.

Municipal Winter Works

The Municipal Winter Works Incentive Program operated during the year, the effective period being October 15, 1960 to May 31, 1961. Two municipalities in the Yukon and five in the Northwest Territories participated; the estimated costs of the approved projects during the period of the program were \$2,000 and \$20,000 respectively.

Plans for 1962

Normal operations, with expansion of training facilities and activities at Whitehorse, where construction of a new trade school will commence, and at Yellowknife, where an extension will be added to the existing vocational school.

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

DOMINION OBSERVATORIES

Responsibilities To extend to Northern Canada the same geophysical research and mapping techniques as are used in the South. This includes: regional gravity surveys of the Northwest Territories including the Arctic Islands, the maintenance of seismic and magnetic observatories; the study of heat flow and electrical conductivity in the earth's crust and beneath, and the investigation of possible meteorite craters and other interesting geological structures by geophysical methods.

Long-term Plans

To continue the above mentioned activities indefinitely into the future. It is expected that additional seismic and magnetic stations will be established and geophysical studies extended not only to the northernmost Arctic Islands but also into the Arctic Ocean as well. To study by geophysical methods the channels between the Islands.

Review of 1961 Operations

Magnetic observatories manned by one person each were maintained at Resolute and Baker Lake throughout the year, and at Alert and Mould Bay during the latter part of the year. With the aid of automatic recording equipment the daily, seasonal, and annual variations in the earth's magnetic field were studied. Airborne three-component magnetometer surveys of the southern part of the Northwest Territories were completed. Ground magnetic survey parties operated in the Arctic Islands.

A gravity survey of the southern half of Baffin Island was completed. Some 2200 stations at intervals of eight to ten miles were established using two Bell 47-J helicopters for transportation. Gas caches were established at 75-mile intervals by ski-equipped DC 3 aircraft during May; at most of these caches small amounts of aviation gasoline still remain.

Frobisher Bay was the marshalling point for crews and equipment; Pangnirtung and Cape Dorset were used as secondary bases and field camps were established in the Putnam Highlands, and on an unnamed lake some 40 miles east of Nettilling Lake.

Plans for 1962

The magnetic observatories at Resolute, Baker Lake, Alert, and Mould Bay will be maintained. Airborne three-component magnetometer surveys of the Canadian Arctic will be undertaken. Magnetic field parties will operate in an area surrounding the north magnetic pole and in conjunction with the Polar Continental Shelf Project. The gravity survey will be extended to cover the northern and eastern parts of Baffin Island and in addition detailed gravity, seismic, and topographical surveys will be made at selected portions of the Penny and Barnes icefields. Seismic stations will be constructed at Coppermine and Frobisher.

GEOGRAPHICAL BRANCH

Responsibilities Obtaining data, through field investigation and compilation, on physical, economic, and social geography. Preparing suitable maps and explanatory reports describing and interpreting these geographic factors. Assisting in other phases of planning and development through the provision of fundamental geographical data, including the investigation of questions of geographical nomenclature.

Long-term Plans

To complete preliminary reconnaissance terrain mapping by areas according to the National Topographic system, bearing in mind the constant need for certain more detailed investigations designed to solve problems vital to reconnaissance mapping or of particular significance to the economic development of the North.

To complete the mapping and interpretation of data on the distribution of ice in Canadian waters and glacial ice on land.

To complete land use surveys around the settlements in the North.

Review of 1961 Operations

Field studies of terrain conditions and geomorphology were continued in Ellef Ringnes Island and inaugurated on Borden Island and Baffin Island. Glaciological studies were continued on Meighen Island and initiated on Baffin, Bylot, and southern Ellesmere islands. An airborne reconnaissance survey of sea ice conditions in the central Queen Elizabeth Islands was begun from bases at Isachsen and Resolute. Settlement studies were conducted at 34 settlements in the central Arctic.

Owing to a pre-field season accident and illness, the projected per-glacial research on Cornwallis Island had to be postponed. It proved impossible to obtain a suitably qualified geographer to carry out the proposed work in the Sugluk-Wolstenholme area.

Investigation was completed for 285 new names and 188 contentious names in conjunction with 14 new maps, 11 new charters, and 44 general submissions. Some 1,500 previously approved names were reviewed for orthography and application.

Plans for 1962

With completion of the Ellef Ringnes and Border Island programme, work in the sector will be transferred to Melville Island, in conjunction with the Polar Continental Shelf Project. Terrain analysis mapping will be initiated and, in particular, a precise study of the present and old raised beach forms will be undertaken. Glaciological work will be continued on Meighen Island, and will be expanded to include a study of the geomorphology of the presently ice-free area.

An eight-man party will begin detailed terrain, glaciological, and geomorphological studies on, and in the vicinity of, the Barnes Icecap on Baffin Island. Glaciological, and geomorphological studies on, and in the vicinity of, the Barnes Icecap on Baffin Island. Glaciometeorological observations will be taken from April until early September, and precise glacial survey will be commenced. This work will be based on a reconnaissance completed in 1961.

The airborne sea ice surveys in the central Queen Elizabeth Islands will be continued.

GEOLOGICAL SURVEY OF CANADA

Responsibilities To prepare geological maps and reports describing bedrock and unconsolidated deposits; to investigate and assess mineral resources and the geological factors affecting their formation, discovery, and development; to provide fundamental geological data for engineering and water supply projects and other factors affecting land use; to make contributions to the science of geology.

Long-term Plans

Highest priority is given to the task of completing the preliminary reconnaissance study and mapping of the north. When completed, this reconnaissance should go far towards meeting the immediate demands of the mining and petroleum industries for geological data on remote areas. It will permit preliminary estimates of the mineral potentialities, and should provide urgently needed data for future geological and other developmental work.

Large, helicopter-supported, field parties have successfully conducted extensive, rapid, good quality, and economical reconnaissance geological surveys in the barren grounds of the mainland Canadian Shield, in the Arctic Islands, and in the upper Mackenzie River Basin. They have also proved effective in mapping mountainous parts of the Yukon. Specially equipped Piper Super Cub aircraft have successfully aided geological operations under special terrain conditions in the Queen Elizabeth Islands, and on Banks and Victoria Islands. Full use of such techniques will be made to ensure the completion of the geological reconnaissance of most of the Yukon and Northwest Territories by about 1970.

This reconnaissance effort will continue to be supported by more detailed studies needed to solve critical geological problems, especially those required to maintain the quality of the reconnaissance or aid in the understanding of mineral occurrences. These types of studies will receive progressively greater emphasis as the reconnaissance approaches completion.

Aeromagnetic surveys as made by, or for, the Geological Survey are primarily a supplementary method of obtaining reconnaissance geological data. As a result of an \$18 million co-operative program of aeromagnetic surveying started in 1961, it is expected that an aeromagnetic survey of the Canadian Shield in Northwest Territories, and amenable parts of the Yukon, will be completed within 12 years. The surveys will be made by contracts with commercial survey companies.

Yukon and Mackenzie River Basin

As a result of the successful employment of helicopters in large-scale mapping of parts of southern Yukon and Mackenzie River valley (Operation Pelly, southeastern Yukon, 1960; Operation Ogilvie, southern Yukon, 1961; and Operation Mackenzie, upper Mackenzie River valley, 1957), similar techniques will be employed by Operation Porcupine in 1962. This operation is expected to complete the reconnaissance mapping of the Yukon and adjacent parts of the Mackenzie District north of the 65th parallel. It will be followed some 4 or 5 years later by a similar major project that will complete the reconnaissance mapping of the sedimentary rocks of the northwestern Mackenzie District. Parts of southeastern Yukon and adjoining areas in Mackenzie District not mapped by the end of 1962 are expected to be examined by helicopter-supported parties during the next several years.

In 1961, the Geological Survey made, by contract, its first aeromagnetic survey in the Yukon. Fixed-wing aircraft were used. The preliminary results suggest that other useful aeromagnetic surveys can be made in this way in other parts of southern Yukon where the relief is not prohibitive. Plans are to assess thoroughly the results of the 1961 work before further surveys are made, then to continue the aeromagnetic surveys, using fixed-wing aircraft or helicopters, into whatever other areas topography and available techniques permit.

Districts of Mackenzie and Keewatin

Operation Bathurst Inlet, planned for 1962, will be the sixth of seven helicopter-supported operations required to complete the reconnaissance geological mapping of the Precambrian areas of mainland Northwest Territories. The seventh and final operation will be mounted in the Wager Bay region about 1964.

District of Franklin

Both helicopters and Piper Super Cub aircraft could be used to complete much of the reconnaissance mapping of the District of Franklin during the next few years. Axel Heiberg and northwest Ellesmere Islands were partly mapped in 1961, and will be completely mapped by the end of 1962. Prince of Wales Island, King William Island, and Boothia Peninsula will be mapped in 1962, completing reconnaissance geological investigations of the Arctic Islands west of Baffin Island. Beginning in 1963, Cornwallis, Bathurst, Melville, and Devon Islands will be studied in a manner appropriate to the publication of geological maps on a scale of 1 inch to 4 miles. Preliminary reconnaissance maps of these islands are presently available as a result of Operation Franklin in 1955, and earlier projects, but more detailed geological data are required to guide the oil companies contemplating exploration of this region. A helicopter-supported reconnaissance survey of the northwest part of Baffin Island is planned for 1963, and other such surveys will follow with the object of completing the reconnaissance of the island within the decade, or shortly thereafter.

Review of 1961 Operations

Twelve parties operated in the Yukon and Northwest Territories.

In the District of Franklin reconnaissance bedrock mapping of Grenville-type Precambrian rocks in southwest Baffin Island was continued from previous years, as was reconnaissance bedrock mapping of Precambrian and lower Palaeozoic strata in southern Ellesmere Island. An aircraft-supported operation began reconnaissance mapping of Palaeozoic, Mesozoic, and Tertiary rocks and surficial deposits on Axel Heiberg and north-western Ellesmere Islands. About 30,000 square miles of this region were examined. Submarine geology investigations were made as part of the Polar Continental Shelf Project in the Arctic Islands, and submarine geology and geophysical studies carried out in Hudson Bay with the support of the Division of Oceanographic Research.

In the Mackenzie District a study of pegmatites in relation to surrounding rocks, begun in the spring of 1960, was continued, with field examinations concentrated in the Yellowknife-Beaulieu area. A regional study of two major Precambrian rock groups and several granitic masses associated with them, northwest of Yellowknife, was also undertaken to re-define, confirm, or revise the current correlation of the various map-units used to date in this region. An aeromagnetic survey was made of the Muskox ultra-basic complex northeast of Great Bear Lake to help delineate the horizontal and vertical extent of this magnificently exposed example of differentiated subcrustal rock.

An aeromagnetic survey was made, by contract, of an area between Uranium City and Fort Reliance, thus filling the remaining gap in aeromagnetic surveys of the Canadian Shield of the southern Mackenzie District.

In Yukon Territory, Operation Ogilvie, an helicopter and fixed-wing aircraft supported project, completed bedrock and surficial geology reconnaissance mapping of 14,500 square miles of terrain south of the 65th parallel. Studies continued from 1960 on the surficial geology and geomorphology of the Klondike area, and on the copper deposits in the Territory and adjacent British Columbia. Engineering geology studies were made at ten possible dam sites on rivers in the Yukon and Mackenzie River drainage basins. To date 32 possible dam sites have been examined in this project.

An aeromagnetic survey was made, by contract, of an area between Whitehorse and Watson Lake bounded by 60°00' and 62°00' and longitudes 128°00' and 135°00'. Flying specifications were modified to suit the mountainous terrain, and the results so obtained have not been fully evaluated.

Plans for 1962

Some 16 field projects are planned for the Yukon and Northwest Territories. Operation Porcupine will undertake bedrock and surficial mapping of the 80,000 square miles of Yukon and Northwest Territory lying north of the 65th parallel and west of the 123rd meridian. Studies will continue on Project Klondike, a surficial geology investigation aimed at prolonging the life of placer gold mining in the Klondike district, and engineering geology studies of possible dam sites in the Yukon, begun in 1959 at the request of the Department of Northern Affairs and National Resources, will be continued.

Two aeromagnetic surveys, comprising a total of about 80,000 line-miles will be made in the Northwest Territories by commercial operators, under contract. One will operate from Yellowknife in parts of NTS map-areas 85 and 86, the other from Isachsen in connection with the Polar Continental Shelf Project.

Operation Bathurst Inlet will examine the Precambrian rocks and surficial deposits of some 50,000 square miles of Mackenzie District inland from the Arctic coast near Bathurst Inlet. Regional stratigraphic correlation studies in western Mackenzie District will continue, and two other parties will seek to solve critical geological problems, and to establish the relation of mineral deposits to regional geology.

In the Keewatin District one party will investigate geological problems revealed by Operation Keewatin in 1952, and a second will continue submarine geological studies started in 1960 in co-operation with the Division of Oceanographic Research.

In the Franklin District one party will complete the reconnaissance bedrock mapping of post-Precambrian rocks on Axel Heiberg and Ellesmere Islands, while a second party will examine the bedrock and surficial geology of Prince of Wales and King William Islands, and Boothia Peninsula. Studies of the submarine geology off the Arctic Islands, in connection with investigations of the Polar Continental Shelf Project, will be continued. Preparations will be made for 1963 geological operations in northwest Baffin Island by caching fuel and supplies. Other caches will be established for geological work planned for 1963 on Cornwallis, Bathurst, Melville, and parts of Devon Islands. The Geological Survey staffs at Whitehorse and Yellowknife will be supplemented by a Scientific Officer to allow the resident geologists to spend more time at the tasks generally expected of provincial geologists.

MINES BRANCH

Responsibilities Technical assistance for the development of mining and metallurgical industries in the North, and for the development and utilization of petroleum and natural gas resources. Consulting advice and investigations on metals, metallic and non-metallic minerals, fuels, petroleum, natural gas, and industrial waters as related to northern development.

Long-term Plans

To continue technical assistance for developing mineral, petroleum and natural gas resources and co-operating with industry, the Department of Northern Affairs and National Resources, and other branches of Government; to continue to investigate the low temperature properties of metals, and of the techniques for joining them under arctic conditions; to carry out sampling and chemical quality studies of northern waters as part of the general investigation of industrial waters; to continue mineralogical studies related to northern ore deposits.

Review of 1961 Operations

Metallic ores

Investigation continued into the processing of a tungsten (scheelite) ore from a deposit in the Flat River area, N.W.T., being developed by Canada Tungsten Mining Corporation. A new acid leaching process was developed for producing a shipping grade tungsten concentrate from a flotation concentrate, using sulphurous acid produced from sulphides in the ore as the leaching agent. A preliminary investigation demonstrated the feasibility of producing metallic tungsten from the acid leach concentrate by fused salt electrolysis. The concentration of a silver-lead-zinc ore by differential flotation was studied for Conwest Exploration Company Limited. The ore is from a deposit northwest of Watson Lake.

Non-metallic Minerals

Samples of gypsum from an occurrence in southern Yukon Territory were examined, and the physical properties of the gypsum determined.

Industrial Waters

A five-year program of sampling and analysis of northern waters, started on the Mackenzie River in 1960, was extended to the Yukon River. Samples of surface and ground waters were analysed for the Geological Survey of Canada. Technical assistance on problems of water in the north was given to the Department of National Defence and other groups.

Mine Air

Analyses of mine air for the Department of Northern Affairs and National Resources were made on eleven samples (5 Con Mine, 3 Giant Yellowknife Mine, and 3 Elsa Mine).

Mineralogical studies

Reports were issued on the mineralogy of two samples of tungsten ore from Canada Tungsten Mining Corporation, Watson Lake, and of five samples of lead-zinc-silver ore from Conwest Exploration Company Limited. A mineralogical examination of tailings from the former Negus Mines, Yellowknife, indicated that recovery of residual values would be difficult.

Chemical Analyses

Only one sample from the Territories was analysed for gold. A spectrochemical analysis was made of two samples of tungsten ore from Canada Tungsten Mining Corporation, Watson Lake.

Development of Steels for Northern Use

Because of accelerated construction in the North, the long-term project on welding at low temperatures was reopened in order to evaluate the codes set up for the construction of bridges, buildings, pipelines, etc., under severe conditions. By rigid evaluation it is hoped to eliminate unnecessary precautionary measures that would delay progress in construction. Because of the expense and difficulty of transporting heavy objects in the far North, the Branch continues to search for new alloys with increased strength-to-weight ratio for use in land and air vehicles and other equipment. One of the indigenous problems in Northern Canada is that of brittle failure of steels, since the notch-brittle properties that give rise to it are likely to worsen suddenly at a particular low temperature level. It would be uneconomic to specify, for every type of service, materials not subject to brittle failure. The selection of steels with adequate notch-ductility and, preferably, good weldability for a particular service must be achieved with a careful balance between the technical and economic factors involved.

Plans for 1962

Technical and scientific services will be provided for assisting in the opening of new mines, for increasing mineral production in the Territories and for solving production problems of petroleum and natural gas. Scientific advice will be available, and investigations will be undertaken as required on northern problems related to metals, minerals, fuels, petroleum, natural gas and industrial waters. Specific projects include the continuation of investigations into the processing of tungsten ore from the Canada Tungsten Mining Corporation, Watson Lake, and the continuation and extension of the long-range sampling program on the quality of waters in northern rivers.

POLAR CONTINENTAL SHELF PROJECT

Responsibilities To carry out a long-term investigation of the continental shelf lying to the north and west of the Canadian Arctic Archipelago and of the waters above it, together with the islands of the archipelago where relevant, and the straits and sounds between the islands.

Long-term Plans

The field survey and research phases of the project will eventually cover all the Canadian sector of the arctic continental shelf of North America and all parts of the Arctic Archipelago not investigated by other agencies in this field. That part of the region facing the Arctic Ocean has been divided into sections about 400 kilometers wide. The 1961 work was carried on mainly in one of the central sections between Meighen Island and Borden Island, with supplementary work extending to Axel Heiberg Island and Banks Island. In 1962, the area of intensive work will be shifted slightly to the southwest, to centre on the region between Ellef Ringnes Island and Brock Island, and special investigations are planned for the Penny Strait, Byam Martin Channel, and Melville Island areas. Additional work will be done as required on the waters and islands in other areas, including Robeson Channel at the northeast corner of the archipelago. It is expected that the main area of research and survey will shift along the Arctic Ocean front about 150 kilometers each year, for the next three or four years, with the first moves being expected to remain about the same size as at present.

Review of 1961 Operations

Field work was co-ordinated from Isachsen, on Ellef Ringnes Island. A party totalling 86 persons investigated the central section of the arctic continental shelf and adjacent islands and straits. The following is a summary of the work done in the major scientific fields:

Oceanography

The oceanographic programme has been designed to investigate the structure and composition of the waters overlying the continental shelf, and in the channels between the islands. A series of oceanographic stations was occupied across M'Clure Strait, and in Eureka Sound, completing a programme of investigation of each of the channels leading from the Arctic Ocean into the archipelago, and across the continental shelf. Temperatures and water samples were taken at all standard depths at each of these stations; bathythermograph casts were made, and bottom samples obtained. A series of detailed investigations of the characteristics of the waters beneath bay ice was carried out near the coast of Ellef Ringnes Island. This work included studies of the water chemistry, light penetration, and plankton distribution.

Hydrography

The principal objective of the hydrographic survey has been to produce information for bathmetric mapping, on a scale of 1:500,000 of the ice-covered waters of the Arctic Archipelago and the adjacent Arctic Ocean. Approximately 74,000 square kilometers have been sounded to date in this programme, with soundings about 8 kilometers apart, covering Peary Channel, part of Sverdrup Channel and Vincent Massey Sound, Hassel Sound, Hendriksen Strait, Danish Strait, Maclean Strait, the eastern half of Prince Gustaf Adolf Sea, and the Arctic Ocean seaward from Meighen and Ellef Ringnes Islands out to the outer edge of the continental shelf, which in this area has an offshore width of approximately 150 kilometers. The development of a method of obtaining echo soundings from the top of the sea ice, using helicopter-borne equipment, has been successful and has resulted in an approximately tenfold increase in the speed of obtaining hydrographic data. Development has also been under way on Helicopter-borne sounding equipment capable of obtaining continuous depth profiles from cracks and pools of open water.

The hydrographic party also reconnoitred the terrain and beaches, and charted the ship approaches, at possible sites for an isotope-powered automatic weather station in the Norwegian Bay area. The report and preliminary navigation chart contributed to the successful establishment of the station on Sherwood Head, Axel Heiberg Island.

Submarine Geology

The programme in submarine geology is designed to provide information on the character and stratigraphy of the sediments on the floor of the seas surrounding the islands of the archipelago, and covering the continental shelf. The inshore programme was carried out along the coasts of Ellef and Amund Ringnes Islands, in Hassel Sound, and adjacent areas. A party travelling by dog teams with helicopter and fixed-wing aircraft support obtained samples of the bottom materials at carefully spaced intervals out to sea from the mouths of selected rivers, in order to obtain a quantitative picture of the mineralogical and mechanical distribution of the sedimentary material being delivered to the present ocean. A complementary study was made of the lithology, erosion, and sediment transport within the river basin, in order to observe the relation between the present-day arctic marine sediments and the source area.

The offshore geological studies, designed to investigate the unconsolidated material on the continental shelf, were limited by the loss of bottom sampling equipment during an early phase of the work. Bottom samples were obtained at the oceanographic stations.

Seismic Surveys

The geological structures lying beneath the surface of the island and under the seas were investigated by a series of reflection and refraction seismic profiles. Information on the thickness of the sedimentary sequence and of the underlying crystalline material was obtained at a number of selected places which make a composite profile from near the assumed centre of the "Sverdrup Sedimentary Basin" at the south end of Ellef Ringnes Island, to what appears to be near its northwestern flank, north of Borden Island. The sediments in the central part of the Basin have an apparent thickness in excess of 10,000 metres. The techniques of seismic survey in ice-covered waters and on permafrost, pioneered in 1960 were further refined, and with the equipment and methods now available it is possible to carry out effective seismic surveys using motor toboggan or helicopter transport. An incidental result of the seismic surveys is that in some places it appears possible to identify the base of the permafrost layer; under Borden Island this appears to be at a depth of about 1,400 meters.

Gravity Investigations

The regional gravity survey was extended in 1961 with a network of control "base loops" linking stations about 80 kilometers apart, supplemented by detailed gravity stations at about 12 kilometer intervals, to cover the area from west-central Devon Island to eastern Melville Island, and from Parry Channel northward to the limit of 1960 coverage in the seas south of the Sverdrup Islands.

Geomagnetism

Comparative studies of the strength, variations, and rates of fluctuation of the magnetic field were made at Isachsen, Mould Bay, Meighen Island, the Jacobsen-McGill camp on western Axel Heiberg Island, Eureka, and southern Axel Heiberg Island. The resulting information is being analysed to give a more accurate picture of the geomagnetic field pattern and the mechanism of its fluctuations.

Aeromagnetic Surveys

Approximately 25,000 line kilometers of aerial magnetic survey were flown in the area of the Ringnes Islands and the ocean to the northwest. Flight line spacing varied from 1 to 15 kilometers. The information gained gives an indication of the depth to the crystalline basement rocks, and the distribution of igneous rocks, gypsum bodies, and other masses with distinctive magnetic properties.

Physiography

The detailed investigation of the land forms of Ellef Ringnes Island was completed, and a comparative study undertaken on Borden Island.

Geographical Branch

The regional studies have been supplemented by quantitative measurements of the sediment loan in a selected seasonal arctic river throughout the summer, and by measurements of ground temperatures, the rate of solifluction, the development of ground ice, and the behaviour of permafrost in silty ground near Isachsen.

Glaciology

The glaciological research station on the ice cap of Meighen Island was occupied for the third consecutive season. Measurements were made of accumulation and ablation, mass wastage, ice movement, temperatures at depth, and other parameters which serve to determine the response of the glacier to its climatic environment. Observations of the meteorological and micro-meteorological conditions on and surrounding the ice cap have been continued and a physiographic study made of the ice cap margin. The results of this work will be combined with those of the seismic, gravity, magnetic and botanical studies in the area, to give a picture of the recent history of the ice cap and thus an indication of the climatic history of this part of Canada.

The experiments investigating the effect of altering the index of solar heat absorption of the ice, begun in 1960 with the application of various amounts and kinds of heat-absorbing materials to the surface, were continued with the spreading of a variety of reflecting and protective substances on the surface of the ice cap. It was found possible to protect snow structures and working areas throughout the ablation season. These experiments should have practical applications in the construction and preservations of harbours, docks, airstrips, storage facilities, etc. in ice-covered regions.

Sea Ice Studies

Systematic patrols were made of all major water areas of the Queen Elizabeth Islands, part of Parry Channel, and the adjacent Arctic Ocean, throughout the season of significant sea ice activity. Information on the nature, break-up, amount, distribution, dispersal, and formation of sea ice was recorded, and will be related to meteorological and oceanographic observations.

Biology

Collections of plankton and small marine organisms were made at the oceanographic stations.

Samples of bottom muds were taken and shipped in sterile containers to the laboratories of the University of British Columbia and the National Research Council in connection with investigations of the distribution of bacteria in arctic regions.

Topographical Survey

The tellurometer and theodolite base line traverse, through which the Decca sites are linked to the geodetic network, was completed along the Arctic Ocean front from Ellesmere Island to Banks Island. The site for the Decca transmitter on Brock Island was surveyed. Control surveys in greater detail were run for hydrographic surveys off the shores of western Ellef Ringnes Island. Vertical control profiles for 1:250,000 mapping were run across Ellef Ringnes Island, and ground control established on King Christian Island. A survey was carried out on southern Melville Island to establish a meridian reference line in connection with the boundaries of commercial leases in the area.

Plans for 1962

Work will be continued in all major subjects studied in 1961, except for the reconnaissance oceanographic programme, which has been completed for the time being. Oceanographic work will be confined to the re-occupation of a few stations as a check on the stability, from year to year, of marine conditions. The hydrographic sounding on a scale of 1:500,000 will concentrate on the ocean north of Borden Island, on western Prince Gustaf Adolf Sea, Hazen Strait, and Byam Martin Channel. A new programme of hydrographic charting, on a scale of 1:100,00 will be undertaken in Penny Strait. Soundings will be taken through the ice and in cracks and open water at 1 kilometer intervals using a specially developed helicopter-mounted echo sounder, and fixed by a portable Decca "Hi-Fix" electronic survey system tied to the Army Surveys Establishment topographic control network.

The submarine geology team will attempt systematic sampling of the material on the continental shelf off the entrance to Prince Gustaf Adolf Sea, make representative traverses across the Prince Gustaf Adolf Sea, and study the rivers on western Ellef Ringnes Island that bring material to that sea.

The seismic party will investigate the crustal structure between Ellef Ringnes and Borden Islands, and offshore from Borden Island, in an attempt to determine the depth through the crustal rocks to the mantle in that area. It will then begin a 600 kilometer traverse across the Sverdrup Basin, from Resolute Bay to Borden Island via Grinnell Peninsula, using specially-built Nodwell tracked trucks.

Gravity studies will be extended to include Melville and Prince Patrick Islands and adjacent regions, and all oceanic areas covered by hydrographic sounding. The base loop control network will be carried if possible to Smith Sound, thus covering essentially all of the Queen Elizabeth Islands south of Lat. 80°N.

Geomagnetic studies will be carried out in an area of special interest near Robeson Channel, at the northeast corner of Ellesmere Island. Aeromagnetic surveys are planned for the Prince Gustaf Adolf Sea area and the ocean north of Borden Island.

Systematic physiographic studies will be started on Melville Island. The present series of glaciological studies on Meighen Island will be brought to a close, and preliminary surveys run for future glaciological work on the ice caps of Melville Island. The sea ice patrols will be continued, with an aircraft fitted for controlled aerial photography.

If the work progresses as planned, the Decca transmitter at Cape Isachsen will be moved, late in the season, to a new site on northwestern Prince Patrick Island, giving survey coverage of the Borden Island-Ballantyne Strait region and the corresponding offshore oceanic region.

A camp, enlarged from the two buildings erected in 1961 and planned to accommodate 60 persons, will be built at Mould Bay in anticipation of the increased activity in that area in the next few years.

Field work will employ about 80 men, not counting crews of transient freighter aircraft and others who may visit the field for short periods. Aerial transport in the field will include three Otters, one twin-engine Beechcraft, two Sikorsky S-55 helicopters, and three Bell 47G2A helicopters. It is expected that an Aero Commander 680 aircraft will be used for the aeromagnetic surveys, and a Piper Supercub for occasional summer transport duties. Ground transport facilities include a Nodwell RN75 general purpose track truck, two Nodwell RN21B seismic traverse vehicles, a Bombardier J5 tractor, a Bombardier BB amphibious carrier, a Canadair C70 RAT, six Eliason K12, and three Autoboggan K95 motor toboggans. The work is now so wide-ranging that the project has no single base; the central communications facilities and workshops are at Isachsen, and aircraft and field parties will operate for varying periods of time from semi-permanent facilities at Resolute, Penny Strait, Mould Bay, Brock Island, Borden Island, Cape Isachsen, Loughheed Island, Cameron Island, Meighen Island, a main ocean camp about 200 kilometers north of Borden Island, and a number of intermediate camps and depots.

SURVEYS AND MAPPING BRANCH

Responsibilities To carry out all geodetic, topographic, oceanographic and legal surveys, and to produce topographical maps and aeronautical and hydrographic charts required for administration, development, and defence purposes.

Long-term Plans

Geodetic Control

Extension of horizontal and vertical control as developments warrant and facilities permit. Astronomic observations to obtain data for investigations concerning the size and shape of the earth.

Mapping

Complete topographical coverage at 1:250,000 as early as possible, at the same time providing 1:50,000 coverage of major routes of travel, strategic settlements, and areas important in natural resources development, extending this 1:50,000 coverage as development proceeds; revision of air chart bases as better information becomes available.

Hydrographic Charting

Completion of standard hydrographic surveys of the Arctic Coast as soon as possible, and publishing and maintaining the resultant nautical charts; reconnaissance survey where development warrants charting ahead of the regular surveys. Oceanographic and tidal surveys for defence and other scientific purposes; maintenance of a reliable sailing directions as published in the Pilot of Arctic Canada.

Aeronautical Charting

Revision of the portrayal of aids to air navigation on aeronautical charts, and production of new aeronautical charts as required.

Legal Surveys

Management and execution of surveys made to enable land transactions involved in the administration and development of public lands.

Review of 1961 Operations

Geodetic Control

The large arc of triangulation extending from McLennan, Alberta, to Prince Albert, Saskatchewan, was completed. The two arms of this arc meet near Beaverhill Lake, 150 miles east of Fort Reliance. From this junction-point the arc was extended eastward to Dubawnt Lake. An arc of triangulation was completed from Cambridge Bay to Bathurst Inlet and south to Beechey Lake. Astronomic control was established at Cambridge Bay, Bathurst Inlet, and near Beaverhill Lake.

Topographic Mapping

Field work included.

(a) traverse of about 3000 miles in the northwest quarter of Baffin Island, Devon Island, and the southern end and west coast of Ellesmere Island, for 1/250,000 mapping.

(b) spirit levelling of 315 miles along the Stewart River, for investigation of potential power resources in the Yukon River basin.

(c) surveys for plans of 30 northern settlements on the Arctic coastline and in the Mackenzie River basin.

(d) Surveys in support of the Continental Polar Shelf Project.

In mapping at the 1/250,000 scale 2 map sheets were completed on Baffin Island, and 2 north of Fort Smith, and at the 1/50,000 scale one map sheet in the Klondike district, 12 map sheets at the east end of Great Slave Lake, and 9 map sheets around Fort McPherson. Special plots were made of areas around outer Frobisher Bay, Pangnirtung, Cape Dyer, Dorset Island, Fury and Hecla Strait, Ellef Ringnes Island, Coppermine River, Watson Lake, Whitehorse and Mayo. Material was prepared for plots of 27 northern sites by contract.

Hydrographic Charting

The eastern half of Barrow Strait was sounded by the CMS Baffin using Two-Range Decca for positioning. The horizontal control was established by a closed tellurometer traverse between Devon and Cornwallis Islands, and across Barrow Strait to Somerset Island. A tellurometer traverse was also carried out in the Lady Franklin and Monument Island groups with the traverse extending from Brevoort Island to Cyrus Field Bay. Launches from the Baffin charted Erebus Bay and Gascoyne Inlet.

The M. V. North Star, under charter for the season, ran lines of soundings along the east side of Hudson Bay to Moosonee at the south end of James Bay. The survey was terminated when this vessel struck an uncharted reef in James Bay and became a total loss.

The charted vessel, Arctic Sealer, conducted surveys in the vicinity of Durban and Broughton Islands off the east coast of Baffin Island.

Hydrographers aboard three Department of Transport vessels, JOHN A. MACDONALD, C. D. HOWE, and D'IBERVILLE, carried out reconnaissance sounding surveys in the eastern Arctic, including extensive areas of Hudson Strait and Ungava Bay. Horizontal control was established in Strathcona Sound and a hydrographic survey of the sound and approaches was completed.

Data on tides, currents, and chart revision were obtained using the R. C. M. Police launch SPALDING in Coronation Gulf. Similar information was obtained in various areas of the Western Arctic visited by the Department of Transport vessel CAMSELL.

A launch party based at Moosonee completed the charting, and tidal and current investigations in the Moose River, and approaches in connection with a proposed seaport.

Charting of the Beaver Lake sector of the Mackenzie River, and a reconnaissance survey of the Slave River, from Fort Smith to the estuary, were completed.

Five tide gauges at Tuktoyaktuk, Cambridge Bay, Alert, Resolute and Churchill were checked and maintained.

Fifty-one new or revised charts showing the latest hydrographic information were issued for the Northwest Territories and arctic regions during 1961.

Aeronautical Charting

Six aeronautical chart bases were revised. Aids to air navigation shown on the aeronautical charts of the area were revised as required. The Canada Air Pilot and the military Jet and Low Altitude Pilots' Handbooks were maintained by the production of new and the revision of existing aerodrome charts.

Legal Surveys

Yukon Territory - to provide for the expansion of towns and settlements within the Territory, seven new subdivisions were laid out. Three of these were at Whitehorse - a 172 lot addition to the Riverdale subdivision, an 83 lot addition to the Porter Creek subdivision and a 52 lot transient area. The others were at Watson Lake (40 lots), Tagish (25 lots), Marsh Lake (18 lots) and at Mile 2 of the Whitehorse-Mayo Road (24 lots).

Four sections of the Alaska Highway were relocated, and 24 miscellaneous lots and parcels surveyed at MacRae, Teslin, Haines Junction, Irons Creek, Watson Lake, Daughney Lake, Atlin Lake and Bulkley Lake.

Northwest Territories - Surveys carried out were all in the District of Mackenzie. A 70 lot subdivision was laid out at Fort Smith and an 81 lot subdivision at Hay River. Smaller Subdivisions were done at Fort Smith (7 lots) Frank's Channel (25 lots), Fort Good Hope (7 lots), Fort McPherson (32 lots) and Inuvik (7 lots).

Surveys also included an airport approach at Yellowknife, lots and parcels for school and administrative purposes, and power line, road, and sewer line rights-of-way, at Fort Smith, Fort Resolution, Yellowknife, Fort Providence, Fort Good Hope, Kakisa River, Inuvik and Tuktoyaktuk.

The remaining 12 miles of the Fort Fitzgerald-Bell Rock Road (in Alberta) were surveyed.

Plans for 1962

Geodetic Control

One triangulation party will complete the arc from Beechey Lake to the vicinity of Fort Reliance, and then start a new arc north of Fort Resolution, which will pass through the Yellowknife area and on towards Coppermine. A second triangulation party will continue the arc easterly from Dubawnt Lake towards Baker Lake and Chesterfield Inlet. Astronomic control will be established at Beechey Lake and in the vicinity of Beaverhill Lake and Dubawnt Lake.

Topographic Mapping

Proposed field work includes:

(a) completion of tellurometer traversing around and across Ellesmere and Axel Heiberg Islands.

(b) spirit levelling from Dawson, via the Blackstone, Peel, Eagle, Bell, and Rat Rivers to the Mackenzie River, and from this line via the Bell and Porcupine Rivers to the Alaska Boundary, for investigation of water power potential in the Peel, Porcupine and Rat River regions.

(c) surveys in support of the Polar Continental Shelf Project and the Power Observatories' investigation of Penny Icecap on Baffin Island.

(d) survey for a detailed plot of the Whitehorse district.

The mapping programme includes:

(a) some 10 to 14 map sheets at the 1/250,000 scale on Baffin Island.

(b) possibly 42 map sheets at the 1/50,000 scale on Ellef Ringnes Island.

(c) preparation of material for plots of about 30 northern settlements by contract.

Hydrographic Charting

The BAFFIN's major assignments will be the completion of the 1961 survey of Barrow Strait and the continuation of surveys of Frobisher Bay.

Three hydrographers will be assigned to Department of Transport vessels to continue the surveys at the ports of call in the Eastern Arctic Patrol.

Two hydrographers will be assigned to the CAMSELL in the western Arctic or similar operations. A new hydrographic vessel RICHARDSON, presently being built, will survey at the mouth of the Mackenzie and in Liverpool Bay.

One chartered ship will carry out reconnaissance soundings in the Mill, Salisbury, and Nottingham Islands area, and conduct minor surveys along the east coast of Hudson Bay including Great Whale River, Povungnituk, and North Belcher Islands.

The launch RAE will survey the approaches to the Mackenzie River on Great Slave Lake and carry out reconnaissance sounding from Fort Providence to Norman Wells.

A new gauging station will be installed at Frobisher Bay to extend the network of primary tide gauges in the Arctic.

Aeronautical Charting

Aeronautical chart bases will be revised as new large-scale mapping becomes available. Aids to navigation shown on the charts will be revised as necessary. The Canada Air Pilot and the Jet and Low Altitude Pilots' Handbook will be maintained by production of new, and revision of existing, aerodrome pages.

Legal Surveys

Yukon Territory - Twenty-five group lot surveys will be made in various localities and subdivision surveys at Whitehorse (200 lots), Marsh Lake (25 lots) and Watson Lake (112 lots).

Northwest Territories - Subdivision surveys will be made at Enterprise (250 - 300 lots), Fort Simpson (150 lots), Fort Providence (30 lots), Norman Wells (61 lots) and Hay River (75 lots), (which may be increased to 225 lots), with small subdivision and lot surveys at Nahanni Butte and other locations.

INTERDEPARTMENTAL COMMITTEE ON AIR SURVEYS

Responsibilities To receive from all federal government services requests for air surveys, and to prepare programmes of air survey priorities; to issue technical instructions for carrying out such programmes, and to co-ordinate the activities of commercial and government air survey organizations.

Long-term Plans

To complete the coverage, primarily for mapping, of the Arctic mainland of Canada and the Arctic Islands with high altitude vertical air photography within the next year, and at the same time to cover the Arctic Islands with radar altimetry surveys; to provide large scale air photographs of special areas for development or projected scientific investigations.

Review of 1961 Operations

The high level photo and APR program in the Arctic Island progressed satisfactorily, and probably would have been completed except for persistent fog in the northwest section. Apparently the weather is excellent in the early spring, but the land area is then still snow covered. When the land area becomes sufficiently snow-free for photography fog is prevalent because of the proximity of the polar ice, and the remaining photo days are very few. All that remains to be done in the Arctic Islands is about half of Banks Island, half of Melville Island, and a very small gap on Prince Patrick Island.

The remaining twenty-one Arctic sites, mentioned in last year's report, were completed in 1961, as was the contract in the Yukon being carried out by Aero Surveys Limited.

Bradley Air Services Limited completed, apart from a few gaps, their contract in the head waters of the Flat and South Nahanni rivers, and Spartan Air Services Limited completed their area in the Keewatin District.

The Mackenzie River was photographed from Great Slave Lake to Wrigley.

Very little photography was obtained in the 50,000 square mile area southeast of Ungava Bay.

The Barnes Ice Cap area on Baffin Island was photographed for the preparation of special large scale maps, and additional APR control lines were run across Baffin Island to strengthen the existing APR north-south lines.

Plans for 1962

The Arctic Islands project will be continued, and should be completed in 1962.

The Mackenzie River will be photographed from Wrigley to its mouth.

A two-year contract will be placed for the 50,000 square mile area southeast of Ungava for photography at high altitude. A super-wide-angle camera with a 3 1/2" focal length lens will be used.

Gaps in the Yukon contract and in the area of the Flat and South Nahanni rivers will be covered.

There will probably be a requirement for large scale photography of some additional northern sites.

DIVISION OF OCEANOGRAPHIC RESEARCH

Responsibilities Oceanographic research in the Arctic.

Long-term Plan

The physical and geological oceanography of the Arctic will be studied through a gradually enlarging programme, as personnel become available, both from land-based and ship-based facilities. Oceanographers attached to the Polar Continental Shelf Project will work north and south from the present centre of research, and eastward through the Archipelago to meet ship-based oceanographers working from the south and east.

The object is to provide an intimate knowledge of the marine environment of the Arctic insofar as it affects the economic exploitation and development of the area and the defence of North America.

Review of 1961 Operations

Oceanographic studies were carried out in three general locations from three bases:

- (1) Polar Continental Shelf Project - as described in that section of the report.
- (2) Chartered Vessel M. V. "Theta" - an oceanographic study of Hudson Bay extending from late July to early October included two quasi-synoptic surveys of the Bay. In addition to serial measurements of water properties at 250 stations, bottom studies including photography, sampling, coring, and gravity observations were carried out. Magnetometer and seismic profiling records were obtained.
- (3) C.M.S. "Labrador" and C.M.S. "John A. Macdonald" - A team of oceanographers carried in C.M.S. "Labrador" undertook an extensive oceanographic survey of Davis Strait, Baffin Bay, Lancaster Sound and Smith Sound. Isolated Observations in McClure Strait were obtained. C.M.S. "John A. MacDonald" occupied stations in the Gulf of Boothia and Fury and Hecla Strait.

Plans for 1962

Four oceanographers on each of two D.O.T. icebreakers for the navigational season will survey the accessible waters of the Arctic Archipelago, Davis Strait and Baffin Bay as opportunity offers.

DEPARTMENT OF NATIONAL DEFENCE

CANADIAN ARMY

Responsibilities The Canadian Army is responsible for land defence in the North, and for the following specific tasks:

Maintenance of the Canadian portion of the Alaska Highway, the Haines Road, the access roads to certain airfields and seven emergency landing strips connected with the Highway;

Operation and maintenance of the research, development and training centre at Fort Churchill, which is used by both Canadian and U.S. armed services and research and development organizations;

Defence mapping, which requires the deployment of Army ground survey teams, supported by helicopters and light aircraft under civilian contract, to establish ground control.

Long-term Plans

Normal planning to meet responsibilities. Defence mapping will be continued to complete the Army's responsibilities in this field.

Review of 1961 Operations

Northwest Highway System

Paving of the Alaska Highway between Mile 1.4 and Mile 83.6 was completed, and this section transferred to the Province of British Columbia, together with all works forming part of it. This was in accordance with the terms of the agreement contained in the Privy Council Order PC 1961-102 dated 26 January, 1961, implementing the cabinet decision of 4 October, 1960.

The volume of traffic passing through customs at Mile 1202 on the Alaska Highway, and at Mile 40 on the Haines Cut-Off-Road, for the calendar year 1961, was:

Alaska Highway

<u>Northbound</u>			<u>Southbound</u>	
<u>1960</u>	<u>1961</u>		<u>1960</u>	<u>1961</u>
16,264	17,776	Vehicles	14,409	14,269
39,909	46,767	Passengers	39,367	41,195
15,612	14,830	Tonnage	6,709	6,323

Haines Road

<u>Northbound</u>			<u>Southbound</u>	
<u>1960</u>	<u>1961</u>		<u>1960</u>	<u>1961</u>
3,815	6,038	Vehicles	3,933	6,240
8,922	13,396	Passengers	8,709	13,602
1,737	11,981	Tonnage	511	3,098

Army Survey Establishment

From April to August inclusive, tellurometer traversing was carried out for horizontal control on Cornwallis, Bathurst, western Devon, Cornwall, Amund Ringnes and Loughed Islands. From June to August, tellurometer traversing was also carried out in the Keewatin District.

Royal Canadian Corps of Signals

RCCS interests and activities in the north were the routine functions of providing Canadian Army Signals Systems communications at Whitehorse for the Headquarters and supporting units of the Northwest Highway System, and at Fort Churchill for the Headquarters and supporting units of Fort Churchill.

Fort Churchill

The role of Fort Churchill is the acquisition of knowledge and the development of techniques and equipment to enable men to live and fight in the Arctic and sub-Arctic throughout the year. Its secondary role is to provide support facilities for units with operational commitments, such as a United States Air Force refuelling facility.

During the year the Canadian Army conducted arctic training and various tests and trials of equipment.

Several important buildings of the Rocket Research Facility were destroyed by fire during the night of 27 February. Repairs necessary for the firing of light rockets were carried out, enabling some investigation of upper atmosphere phenomena to continue.

The United States Army Arctic Test Centre moved to Alaska on 1 July.

Plans for 1962

Northwest Highway System

The following construction will be carried out:

- (1) Mile 245 - Prophet River - Utility Building.
- (2) Mile 545 - Coal River - 7 Married Quarters.
- (3) Muskwa, B. C. - Army Workshop and Stores Building.

The following temporary bridges on the Alaska Highway and Haines Cut-Off-Road will be replaced:

Alaska Highway

(a) Mile 246.8	Parker Creek
(b) Mile 398.4	110 Creek
(c) Mile 424	Wood Creek
(d) Mile 712	Canyon Creek
(e) Mile 849	Seaforth Creek
(f) Mile 890.3	M'Clintock River
(g) Mile 1195.8	1196 Creek
(h) Mile 1217.8	Little Scottie Creek.

Haines Road

(a) Mile 48.8	Seltat Creek
(b) Mile 61.3	Clear River

Army Survey Establishment

Horizontal control will be established by tellurometer traversing, using helicopters and light aircraft, in Melville, Prince Patrick, Borden, Brock, and Mackenzie King Islands.

Fort Churchill

The United States Air Force will take over the management of the Rocket Research Facility from the United States Army on 1 July, 1962.

The Rocket Research Facility is to be reconstructed on the site being evacuated by the US Army Ordnance Test Team. Upper Atmosphere tests will be resumed in the fall.

ROYAL CANADIAN NAVY

Responsibilities

Supporting Canada's external and defence policies in the north by contributing to the maintenance of Canadian sovereignty in the Arctic, and by carrying out and supporting operations in Arctic waters. Operation and maintenance of naval radio stations at Inuvik, Frobisher Bay, and Churchill.

Long-term Plans

To maintain close liaison with agencies investigating various defence problems in the Canadian Arctic.

Review of 1961 Operations

Ship Operations

An RCN force of one aircraft carrier, five destroyers, and a submarine operated in northern waters on training exercises in October, 1961. One frigate visited Frobisher Bay, and her ship's company constructed new accommodation for RCN personnel stationed there.

Naval Radio Station Frobisher

The station provided communications to assist the ships supplying the DEW Line.

Alert Radio Station

The RCN continued to contribute personnel for the joint operation of the Alert Radio Station.

Naval Radio Station Inuvik

The transfer of the naval radio station at Aklavik to Inuvik was carried out during the summer.

Clearance Diving Team

An RCN clearance diving team of one officer and six men assisted in the Northern Transportation Company in beach survey and clearance operations in the Coronation Gulf area.

Plans for 1962

An RCN clearance diving team will again be made available to the Northern Transportation Company for beach survey and clearance operations in the Western Arctic. Similar Operations may be carried out by another RCN clearance diving team in the Eastern Arctic.

Operation of the naval radio stations in the Arctic will continue at the present level of activity.

The RCN will support other government departments in scientific and technological research programmes.

ROYAL CANADIAN AIR FORCE

Responsibilities

All aspects of air defence; operation of service airfields in the north; Arctic aerial surveillance and other reconnaissance flights; air resupply of Arctic weather stations and the Army station at Alert; search and rescue operations, including mercy flights and emergency supply when no commercial services are available; co-operation with scientific and government parties in the north as required.

Long-term Plans

Continuation of present activities.

Review of 1961 Operations

Arctic Reconnaissance

Eleven hundred and twenty hours were flown in general reconnaissance and surveillance of the Arctic Islands and of the Polar Basin by Lancasters of 408 Sqn.

Airlift

In addition to numerous special flights in the north, the RCAF flew 887 hours in the Arctic and airlifted a total of 5,574,932 lbs.

Search and Rescue

The RCAF conducted fifteen major search operations for missing aircraft north of 55°N latitude. These operations contributed to the saving of about thirty-seven lives, and involved over 1,225 hours of flying time by the RCAF and other agencies.

Survival Training

Eight Arctic Survival Training Courses were conducted at Resolute during the winter. In addition to RCAF trainees, a number of representatives of foreign services and civilian organizations such as the US Navy and DOT took part.

Distant Early Warning Line

The Canadian portion of the DEW Line is under the operational control of the Commander, Northern NORAD Region, St. Hubert, P.Q. Control was exercised through an RCAF commander and his staff of five RCAF officers at each main station in Canada.

Plans for 1962

Reconnaissance of the Arctic Islands and of the Polar Basin will continue in 1962 on approximately the same scale as in 1961.

Airlift for resupply of the Arctic weather stations will be provided by aircraft operating from Resolute in April and September using C-130B Hercules aircraft. Emergency supply drops will be made as required. Approximately 900 tons of POL will be airlifted from Thule to Alert in April, and approximately 1000 tons of supplies and POL will be lifted in September. Approximately 100 tons of POL and supplies will be distributed to caches in the Melville and Prince Patrick Island areas.

Search and rescue operations will be conducted as necessary.

Arctic Survival Training will be carried out during the winter months from Resolute.

DEFENCE RESEARCH BOARD

Responsibilities

To bring scientific knowledge and experience to the assistance of the Armed Services in solving problems of military operations in high latitudes. To sponsor and undertake research and technical projects of particular assistance to the Armed Services.

Long-term Plans

Research projects of two main types will be conducted: basic studies in the laboratory, and applied studies or field investigations. Almost every aspect of science is involved, with emphasis on factors, particularly cold, affecting the behaviour of man and his machines, and the physical sciences affecting communications, movement, and navigation in and under the sea, on land, in the air, and in outer space.

Review of 1961 Operations

The Defence Research Board conducted research projects on arctic and geophysical problems through its Physics, Engineering and Biosciences directorates at Ottawa, the Defence Research Northern Laboratory at Fort Churchill, the Defence Research Telecommunications Establishment at Ottawa, the Prince Albert Radar Laboratory, the Defence Research Medical Laboratories at Toronto, the Pacific Naval Laboratory at Esquimalt, and the Canadian Armament Research and Development Establishment at Valcartier. It also supported and coordinated research in the north by means of grants and contracts to universities, government agencies, and non-government research organizations. Close collaboration was maintained with research and development agencies in the United States and the United Kingdom.

The Defence Research Northern Laboratory

The Defence Research Northern Laboratory at Fort Churchill continued in the role adopted in 1956 - that of a northern laboratory for visiting scientific teams, with a scientific and technical staff to provide assistance to such teams, made up of about five professional and thirty-five technical and administrative staff. In addition to ad hoc and short-term projects, work was continued on the growth and degeneration of sea and river ice, and auroral observation studies.

The rocket research operations at Fort Churchill were sharply curtailed as a result of a fire in February which completely destroyed the main power plant, preparation building, blockhouse and much of the range instrumentation. It is expected that reconstruction will begin during 1962 and that the research operations will resume on a routine basis early in 1963.

Radio Physics

A programme of ionospheric research continued as in previous years with the cooperation of the Dept. of Transport. This included routine vertical-incidence ionospheric soundings at Resolute and Churchill, and oblique-incidence soundings from Resolute to Ottawa. Low-power VHF scatter circuits were operated during the year but were closed down at the end of 1961. The chain of riometer stations measuring cosmic noise across the auroral zone continued in operation, and constituted a major portion of the research effort. The fire at the range at Churchill prevented rocket studies of the arctic atmosphere. New buildings were erected at the South Camp, Resolute, where one of the four pieces of equipment for recording data from the Canadian top-side sounder satellite will be located. Installation of the telemetry was almost completed. Installation of three new low-power ionosondes began at Baker Lake, Frobisher, Goose Bay. These stations, also part of the satellite programme, will sound the ionosphere from below at the same time as the satellite sounds it from above.

Operation "Hazen"

Previous work in the Lake Hazen area of northern Ellesmere Island, organized or sponsored by the Defence Research Board, included meteorological, glaciological, geological and soil studies. These studies were continued during the summer and in addition, geomagnetic investigations and entomological studies were initiated by scientists from the Dominion Observatory and the Dept. of Agriculture. Eight men were in the field from the middle of May until late August. A total of 16 reports and articles on the work of Operation "Hazen" were published during the year.

Ice Atlas of Arctic Canada

This atlas, compiled under a contract with the Scott Polar Research Institute, was published in April, and is obtainable from the Queen's Printer.

Under-Ice Acoustics

A study of acoustic propagation and ambient noise under ice was begun at the Pacific Naval Laboratory in 1959. Two field operations were undertaken. Investigations were made in April under polar pack ice in the area near Isachsen, and in summer under polar pack ice in M'Clure Strait, working from the icebreaker CMS Labrador.

Conjugate Point Experiment

The Pacific Naval Laboratory, in cooperation with Stanford University, is conducting a combined programme to obtain simultaneous measurements of geomagnetic micropulsations at Byrd Station in the Antarctic, and at Great Whale River and Churchill in Canada, both of which lie near the conjugate point to Byrd Station. The original experiment was completed and a new experiment is being undertaken between Sky-way Station, 75° 14' S, 77° 10' W, in the vicinity of Quebec City.

Vehicle Mobility Studies

Two scientists, two technical officers, and five technicians were engaged in vehicle mobility and trafficability studies which have a bearing on arctic transportation problems, with particular emphasis on the performance of tracked vehicles in snow and muskeg. This programme was carried out by the Vehicle Mobility Laboratory at Canadian Armament Research and Development Establishment, Valcartier. The laboratory facilities were increased by the addition of new soil bins and a dynamometer carriage for model work, improved instrumentation for the dynamometer vehicle and the acquisition of a muskeg reference area for field work.

Biting Flies

The Northern Insect Survey, a project conducted by the Dept. of Agriculture with Defence Research Board support, made an exploratory examination of the Lake Hazen area. An extremely varied and interesting insect fauna was indicated.

Clothing and Cold-weather Refuelling

A critical literature survey was made to evaluate the hazard in aircraft refuelling from static electricity generated by clothing, following several incidents that were attributed to this cause.

Environment Physiology

The Defence Research Medical Laboratories initiated preliminary studies on human subjects to examine the effects of environmental temperature on body fluids, electrolytes and metabolites, and on the cardio-vascular system. This work will be in abeyance pending rebuilding of part of the climatic suite to meet the design specifications.

Experiments continued to elucidate the metabolic alterations in hypothermia in a variety animal species.

Grants and Contracts -

A number of extra-mural studies were supported by grants or contracts with universities and other non-government agencies.

Grants

- (1) To McMaster University for a study of methods of interpreting surface and sub-surface conditions from air photographs.
- (2) To McGill University for a study of micrometeorological factors affecting climate of Canadian forests.
- (3) to McGill University for research on the shearing characteristics of frozen soil.
- (4) To the Institute of Northern Studies, University of Saskatchewan, for research on the sub-arctic sand dunes south of Lake Athabasca.
- (6) to McGill University for work on the reactions of the constituents of the upper atmosphere.
- (7) To the University of Saskatchewan for the support of research at the Institute of Upper Atmospheric Physics.
- (8) To the University of Western Ontario for research on the physics of the troposphere as related to UHF radio transmissions.
- (9) To the Canadian Military Services College, Royal Roads, for a study of the roles of the ionosphere and sun in the origin of the natural electro-magnetic background in the frequency range 0.001 c/s to 100 Mc/s.
- (10) To the University of Toronto for studies of hypothermia and endocrine function, the biochemical mechanisms involved in cold adaptation, and the effects of cold on pharmacological reactions.
- (11) to McGill University for studies of the effects of cold injury on the vascular system and the pathogenesis of cold injury.
- (12) To the University of Manitoba for studies of frostbite and cold acclimatization and for support of an Arctic Medical Research Unit.
- (13) To the University of Ottawa for studies of resistance and acclimatization to cold.
- (14) To Laval University for a study of circulatory adaptation to cold stress.
- (15) To the University of Manitoba Arctic Medical Research Unit for a field study on cold tolerance of Eskimos, in collaboration with NRC.
- (16) To the University of Alberta for research on the flight range of biting flies.
- (17) To Queen's University for research on the reactive principles and specificity of bites of bloodsucking arthropods with particular reference to mosquitoes.
- (18) To the University of Western Ontario for a study of factors in the attractiveness of objects to adult Aedes aegypti.
- (19) To the University of Manitoba for research on the behaviour of biting flies with special reference to orientation and feeding.
- (20) To the University of Alberta for field studies on mosquito biology.
- (21) To the Ontario Agricultural College for studies on the life history and ecology of Simulium rugglesi.
- (22) To the University of Saskatchewan for research on the retrocerebral endocrine system in prairie mosquitoes.
- (23) To the University of Manitoba for field investigations of insecticidal curtain and residual barriers for protection of an inhabited area against invading mosquito flights.

(24) To the University of Western Ontario for a study of the reaction of men and animals to cold and damp.

Contracts

- (1) With McGill University for research on ice physics with special reference to removing ice from runways, and, in conjunction with a programme for the study of sea ice, and the design of an airborne ice thickness measuring device.
- (2) With McGill University for meteorological and geophysical work at Lake Hazen.
- (3) With the Arctic Institute of North America to provide limited consultant work.
- (4) With the Scott Polar Research Institute for the provision of data resulting from the Institute's work in polar research.
- (5) With McGill University for stratospheric research, and for the production of an atlas of 25-mb synoptic weather maps for the Northern Hemisphere.
- (6) With the University of Western Ontario for spectroscopic studies of upper-atmospheric excitation, ionization, and recombination processes.
- (7) With the University of Saskatchewan for optical studies of auroral phenomena at Fort Churchill, Manitoba.

Plans for 1962

It is expected that the Board's programme will be continued on approximately the same scale as in 1961.

A renewed service interest in the operation of ships, and especially submarines in arctic waters is expected to lead to increased activity in oceanography, sea ice, and related fields.

The top side sounder recording station at Resolute will be made operational in readiness for the launching of the satellite, scheduled for September.

It is intended to maintain Hazen Camp as a field research station in 1962 and future years. Plans have also been approved for the establishment of a field station on Tanquary Fiord, where emphasis will be placed on meteorological, glaciological, hydrological, and soil and permafrost studies. The insect survey, carried out by the Dept. of Agriculture with Defence Research Board assistance, will be extended in this area in 1962 to take advantage of the opportunity for unusual ecological and insect behavioural studies.

NATIONAL FILM BOARD

Responsibilities

The production of motion pictures, filmstrips, still photographs, and still photo stories about the Canadian North, its people and their activities, and its resources; arrangements for distribution of this film material in Canada and abroad, including servicing of northern posts and settlements.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

Production

During the calendar year 1961 the Film Board completed a number of films related to northern development. These were:

PEOPLE OF THE ROCK - integration of Eskimos into an industrial area at Rankin Inlet.

BUILDING IN THE NORTH - produced for the National Research Council -- site selection in the north, and the techniques for successful building.

NORTHERN CAMPUS - produced for the Department of Northern Affairs and National Resources depicting the vocational training facilities for Eskimos and Indians at Yellowknife.

JOURNEY FROM ZERO - a travelling library visits remote settlements along the Alaska Highway.

SNOW - the behaviour of snowflakes as governed by the individual crystal state.

MAGAZINE #23 - a short subject (less than five minutes) on "Nickel in the North" about the Thompson Mine in northern Manitoba.

PEOPLE OF THE ROCK, JOURNEY FROM ZERO and SNOW were also produced in French-language versions.

Newsreel coverage included releases on: Eskimo Art - Cape Dorset, Cape Dorset Community, Resolute - Hub of the Arctic, Wildlife Census in the High Arctic, Dawson City Relives its Gold Rush Days, Rail-journey Skagway to Whitehorse, West Baffin, Eskimo Co-operatives (Cape Dorset).

The Filmstrip Unit produced a filmstrip KLONDIKE GOLD RUSH, with particular reference to the role of the R.C.M. Police.

The following photostories dealing with northern subjects were produced for sale to Canadian and foreign newspapers: (1) Eskimo Artists at Cape Dorset; (2) Arctic Char; (3) Kenojuak, Poet of the Arctic; (4) Vilhjalmur Stefansson - Canadian Explorer of the Arctic. These reached Canadian audiences of

5,895,000, 3,344,000, 4,367,000, and 4,135,000 respectively.

Complete day-to-date coverage of the following official tours of the north was made by National Film Board photographers: (1) The visit of Their Excellencies the Governor-General and Madame Vanier to Northwest Canada in June; (2) Prime Minister and Mrs. Diefenbaker's journey to Inuvik and Whitehorse in July.

A number of good black and white, and colour transparencies, depicting the north and the Eskimo's way of life, were purchased from various Canadian photographers for the NFB Photographic Library.

Distribution

Prints of 16mm films were distributed in northern Canada from four main film libraries at Montreal, Ottawa, Fort Smith, and Whitehorse. Additional film service was provided from many NFB offices across Canada including, Vancouver, Prince George, Edmonton, Saskatoon, Winnipeg, Toronto, Halifax, Sydney and St. John's. Reports of screening and attendances are still incomplete but reports received at the four main libraries show a continuing increase in film use:

	<u>Screenings</u>	<u>Attendance</u>
1959-60 fiscal year	4,067	202,170
1960-61 fiscal year	5,346	292,320

In proportion to population, it is estimated that 16 mm film use in Northern Canada is higher than anywhere else in the Western Hemisphere.

Over 120 schools, communities, weather stations, and other outposts in Northern Canada were provided with 16 mm film service, and films were also sent to supply ships, naval vessels and icebreakers. Regular air shipments of films were made to meteorological stations; other shipments were air-dropped in mid-winter to isolated arctic points. Eight monthly film programs with study guides were provided for each of three circuits serving the Yukon Territory, the Mackenzie District, and the Eastern Arctic. The NFB assisted in the organization of the second annual series of film exhibitions at Whitehorse, Dawson, and other Yukon communities. Thirty-nine 16 mm sound projectors and fifteen portable power generators were lent to isolated northern communities. Some 438 prints were added to the NFB outpost 16 mm film library in Montreal.

NFB films about northern Canada were distributed widely in Canada and in over 70 countries abroad, reaching audiences in theatres, over television, and in 16 mm showings. For example, LIVING STONE was shown in 114 Canadian theatres, has been telecast over 16 Canadian TV stations, screened 3,183 times to date. Abroad, this film was distributed in 11 languages in over 60 countries. Another film, ANGOTEE, has been distributed in seven foreign language versions abroad, has received 394 telecasts outside Canada, and was screened 5,630 times in 16 mm during 1960-61. In Canada,

The same film has been telecast 5 times and has accumulated total audiences of 615,000 since first released. In 1961, eight typical NFB films on Northern Canada together reached total world audiences of 2,450,000 in 16 mm showings, together with 711 telecasts and over 1,000 theatrical bookings.

NFB 35 mm filmstrips about northern Canada were sold widely for use in schools and to some extent for adult use.

NFB Newsreel releases on topics regarding northern Canada were distributed to theatres in Canada and throughout the world.

Plans for 1962

Production

A new film YUKON OLD, YUKON NEW, produced for the Department of Northern Affairs and National Resources will be completed in both English and French versions. This will show the Yukon today with its festive atmosphere, as well as retrospective look to the "good old days".

Other film production considerations are:

- (1) a revision of DOWN NORTH for classroom use;
- (2) Geographical Regions of Canada;
- (3) Glaciation;
- (4) Legend of the Nahanni River;
- (5) Polar Continental Shelf;
- (6) Northern Supply Operations;
- (7) Pine Point Railroad.

Filmstrip production plans include a geography series: Introducing Canada's North, Mackenzie River, Yukon, Modern Eskimo, Arctic Islands, Eskimo Art.

Newsreel and still coverage will continue as in the past. Some of the intended stories are: Inuvik, Arctic Char in Salt Waters, Mackenzie River, Oil Explorations and Drilling - High Arctic, Glaciological Survey at Lake Hazen. Two Magazine films (usually ten-minute films with short three to five minute items) are also planned: Dawson City and Up North.

Photo coverage on the Cape Dorset Art Co-operative, obtained last August, will be released as a photostory in February. Still photo coverage on Christmas activities at Pelly Bay, made last December, will be released as a Christmas photostory.

Distribution

Three sets of eight monthly basic film programs will be provided for distribution through the Ottawa, N.W.T., and Yukon film libraries. Distribution officers will visit northern areas as required. Five hundred prints will be added to the Central Outpost Libraries. Close liaison will be maintained with government departments serving northern areas in order to maintain and extend existing film services. Projectors and generators will remain on loan in northern areas.

NFB film and filmstrips about northern Canada will be widely distributed in Canada and abroad through theatres, television, 16 mm programs, and print sales.

DEPARTMENT OF NATIONAL HEALTH AND WELFARE

HEALTH

Responsibilities

Northern Health Service

All responsibilities of the federal government in the field of health, except where military authorities operate health facilities within military establishments.

All responsibilities of the territorial governments in the field of health, undertaken by arrangements with these governments, except the hospital insurance program. Such arrangements are subject to the sharing of costs between the federal and territorial governments in approximate proportion to their respective responsibilities.

Consultative Services

Public Health Engineering, Epidemiology, Maternal and Child Health, etc. on request of the responsible authorities.

Long-term Plans

To develop northern health services, to co-ordinate all federal health services, and to co-operate with community health services in the same manner as would a department of health in a province. This system should, within the budgets of the interested agencies, provide for the types of health services most suitable for the unique distribution of population. The operation by the Northern Health Service of health units in the Northwest Territories formerly operated by the Indian Health Service will continue. New facilities will be developed in co-operation with the Department of Northern Affairs and National Resources, as and when the need for them is demonstrated and resources are made available.

The Yukon Health Plan functioned well throughout the year, under the direction of the Zone Superintendent, Northern Health Service. The Whitehorse General Hospital operated successfully, its Advisory Board taking an active interest under the chairmanship of the Commissioner.

The new general hospital at Inuvik opened on January 13.

The government of the Northwest Territories and the Northern Health Service shared in the operation and maintenance and capital costs of all departmental units in the Northwest Territories. Nursing stations at Tuktoyaktuk (replacement) and Eskimo Point (new) were almost completed, and materials for a new nursing station at Spence Bay were on the site. A residence for a medical officer at Cambridge Bay was completed. Planning of a 28-bed hospital for Frobisher Bay was well advanced.

Health service plans for the period 1962-67 were prepared for the Committee on Federal-Territorial Financial Relations and approved at both the territorial and federal level. These detailed plans were printed in quantity to provide guidance for field officers of all the departments concerned.

Hospitals in the Mackenzie District were inspected by an officer of the Hospital Design Division. Sketch plans were prepared of recommended alterations and additions to some of the hospitals with the object of bringing them up to the requirements of the Hospital Standards Regulations.

Medical arrangements for the care of Eskimos resident near DEW Line establishments were reviewed with senior DEW Line officers.

Simplified instructions for dealing with the mentally ill and patients suspected of having cancer were issued to field staff.

Case findings surveys were carried on through the Yukon Territory, the Mackenzie Valley and the Western, Central and Eastern Arctic. The incidence of new cases of tuberculosis remained high in the Mackenzie and the incidence of venereal disease, principally in the Great Slave Lake area, was higher than the incidence in any of the provinces.

There was an increase in the incidence of infectious hepatitis in the Mackenzie delta.

There was an increase in the incidence of animal rabies in the Northwest Territories. Measures for the prevention of transmission to humans were augmented, in co-operation with the departments of Agriculture, and Northern Affairs and National Resources, and the R.C.M. Police.

Plans for 1962

Nursing stations will be completed at Tuktoyaktuk, Eskimo Point, Coral Harbour, Fort Franklin and Spence Bay. A medical officer will be located at Cambridge Bay. Health centres will be completed at Yellowknife and Hay River, staffed by public health nurses for these municipalities. A dental officer will be placed at Hay River. Public health nurses will be placed at Rae, Fort Simpson and Cambridge Bay. A sanitarian will be recruited for the Mackenzie District and based at Fort Smith.

The construction of the 28-bed hospital at Frobisher Bay will begin.

Training of Indian and Eskimo health workers (auxiliary public health personnel) in the Northwest Territories will begin, based on experience gained in a pioneer project in Northern Manitoba, conducted by Indian Health Services and the Indian Affairs Branch.

Tuberculosis case findings surveys will follow the same lines as in 1961. Other medical and dental surveys will be conducted as usual according to the need and the availability of personnel.

A supervisor of nursing and a sanitarian will be recruited for the public health program in the Yukon Territory, both based at Whitehorse. The health centre at Watson Lake will be converted to a 4-bed nursing station by the addition of a wing. A public health nurse will be placed for full time duty in the health centre at Haines Junction.

A survey will be conducted of the health needs of the population living along the Alaska Highway north of Whitehorse to the Alaska border.

WELFARE

Responsibilities

Administration of Family Allowances and Old Age Pension Security Programme with the co-operation of the Department of Northern Affairs and National Resources and other agencies. Assistance to elderly, blind, disabled and needy unemployed residents of the north.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

In the combined jurisdictions of the Yukon and Northwest Territories a total of \$1,234,718.00 was paid in Family Allowances with 6,125 families and 16,338 children on the rolls at the end of the year; \$422,399.00 was paid in Old Age Security pensions with 648 persons on the rolls.

Under agreements with the Yukon and the Northwest Territories, the Department of National Health and Welfare pays 50 per cent of the costs to the Territories of Old Age Assistance and Disabled Persons Allowances and 75 per cent of the costs of Blind Persons Allowances. In each case the maximum allowance shareable is \$55.00 per month. On December 31st, 1961, the following numbers of persons were in receipt of assistance under these programmes:

PROGRAMME	YUKON	N. W. T.
Old Age Assistance	45	144
Blind Persons Allowances	3	46
Disabled persons Allowances	6	20

Federal payments during the year amounted to \$60,963.97 for Old Age Assistance, \$21,656.25 for Blindness Allowances and \$8,485.00 for Disabled Persons Allowances.

Under the Unemployment Assistance Agreements the Department of National Health and Welfare shares with the Yukon and the Northwest Territories the costs of their social assistance payments. Since claims may be submitted up to six months after the end of the month to which they relate, complete figures are available only up to the end of June, 1961. Total payments during the first six months of 1961 amounted to \$18,260 to the Yukon and \$14,429 to the Northwest Territories. The average number of persons assisted each month was 200 in the Yukon and 292 in the Northwest Territories. The average monthly payments were \$3,043 and \$2,404 respectively.

Plans for 1962

Similar to 1961.

NATIONAL RESEARCH COUNCIL

Responsibilities

Investigations into various phases of pure and applied sciences in northern Canada.

Long-term Plans

At present, three Divisions of the National Research Council have a continuing interest in the north.

The Division of Pure Physics is concerned with cosmic ray measurements.

The Division of Mechanical Engineering has no active work in the north but is engaged in a number of studies that are of significance to northern development.

The Division of Building Research has a continuing interest in the study of permafrost and of northern building problems.

Other Divisions of the National Research Council become involved periodically with northern work on a short term basis.

Review of 1961 Operations

Division of Pure Physics

Cosmic ray equipment was operated at Resolute to study intensity changes in the cosmic ray flux in relation to solar activity and magnetic fields in the interplanetary plasma which affect the cosmic ray flux. The Division is taking part of the responsibility for the satellite tracking station being established at Resolute in connection with the topside sounder.

Division of Mechanical Engineering

Laboratory work on development of consumer and commercial models of catalytic combustion heaters for the standby heating of light aircraft engines continued. In co-operation with the Division of Radio and Electrical Engineering a 10 watt thermo-electric generator using a catalytic combustion heat source is being developed. This power source may be of particular interest for use in the remote areas of the north. The commercial feasibility of commercial-sized absorption refrigeration systems based on the Van Platen - Munters design appears to be comparable with the existing diesel-electric motor driven compressor-system and offers greater reliability. Studies began on its application for use in remote area. The helicopter ice spray rig is being used for evaluation of commercial produced protective systems on standard machines. Both electro-thermal and fluid systems have been tested. Icing trials were carried out on two helicopters.

Division of Building Research

On January 1 a rearrangement of the northern work of the Division resulted in the formation of the Northern Research Group to continue the studies of permafrost, with special emphasis on its implications to northern engineering, as an integral part of the Soil Mechanics Section. All aspects of superstructure and housing in the north became the responsibility of the Housing Section of the Division.

Detailed field investigations of the occurrence and distribution of permafrost and related engineering problems were initiated at the new townsite of Thompson in Northern Manitoba. A drilling programme to investigate the effect of bodies of water on the occurrence and distribution of permafrost was carried out in the Mackenzie River Delta during April. Field studies were continued at the townsite of Inuvik, and at the Kelsey hydro-electric plant on the Nelson River in Manitoba, to follow the performance of various structures constructed on permafrost at these sites, located in areas of continuous and discontinuous permafrost respectively. The collection of information relating to the occurrence and distribution of permafrost in Canada as a whole but with particular emphasis on the southern boundary region was continued. Several thermocouple cables for measuring ground temperatures were fabricated and installed in permafrost near Sugluk and at Schefferville to depths of from 50 to 200 feet. The Division co-operated with the Federal Department of Public Works in a study of the temperature and humidity conditions in buildings at Inuvik in relation to potential condensation problems. A 25-minute colour film on Building in the North was completed and distributed.

Division of Applied Physics

As a result of the studies carried out by the photogrammetric research section in 1960 on Axel Heiberg Island, when the application of photogrammetric methods to glaciological research was investigated, one 1:500,000 scale map of the Jacobsen-McGill University expedition area, approximately 1000 square km in size, and several special large scale maps of selected glacier areas were compiled.

Division of Radio and Electrical Engineering

Some auroral radar and optical observing apparatus were stored at Baker Lake and Resolute to be used during the International Year of the Quiet Sun (1964-65).

Plans for 1962

Division of Pure Physics

Cosmic ray measurements will be continued at Resolute. Some enlargement of the equipment is planned in preparation for continuing the studies during the Year of the Quiet Sun. Assistance will be given in the operation of the satellite tracking station in connection with the topside sounder.

Division of Mechanical Engineering -

No specific work is planned in the north but various research and development programmes will be continued.

Division of Building Research

Observations of permafrost and the performance of engineering structures and facilities founded on perennially frozen ground at Inuvik and the Kelsey Generating Station will be continued. Further field studies of permafrost and building foundations will be carried out at Thompson. Reconnaissance surveys will be made along several routes and proposed locations of roads and railways in the southern boundary region of permafrost, and information on permafrost occurrence collected. Continuing reports of condensation in northern buildings indicate the need for further studies of this problem and the Division intends to make investigations of specific cases as they occur.

DEPARTMENT OF NATIONAL REVENUE

CUSTOMS AND EXCISE

Responsibilities

To administer the Customs and Excise laws and regulations, particularly the Customs control of movement of aircraft and vessels.

Long-term Plans

To increase Customs service in pace with the development of the north.

Review of 1961 Operations

In the Yukon Territory, Whitehorse and Dawson were operated as Customs ports. These ports had sub-offices at Snag Creek, Carcross, and Pleasant Camp, B.C., and at Little Gold Creek and Old Crow respectively.

The regular Customs Officer at Frobisher Bay, N.W.T., was operated by one full-time officer under the jurisdiction of the Port of Ottawa. The Inuvik office was operated on a part-time basis by an employee of the Department of Transport, under the jurisdiction of the port of Edmonton.

At nineteen points officials of other government departments act as Customs Officers for the purpose of clearing ships and aircraft. These were as follows:

Royal Canadian Mounted Police

Baker Lake
Cambridge Bay
Chesterfield Inlet
Coppermine
Eskimo Point
Herschel Island, Y.T.

Lake Harbour
Pangnirtung
Pond Inlet
Resolute
Sachs Harbour
Spence Bay
Tuktoyaktuk

Quebec Provincial Police

Fort Chimo, P.Q.

Department of Transport

Alert
Eureka
Coral Harbour

Isachsen
Mould Bay
Inuvik

Plans for 1962

Normal planning to meet responsibilities.

DEPARTMENT OF NATIONAL REVENUE

TAXATION DIVISION

Responsibilities

Assessment and collection of Income Taxes and Estate Taxes.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

Taxation matters in the Yukon Territory were handled through the district office at Whitehorse and those of the Northwest Territories through the district office at Edmonton.

Plans for 1962

The establishment of the Whitehorse office is a small one of only six persons and will be at full strength during the year.

Taxation matters in the Northwest Territories are dealt with by periodic visits by members of the Edmonton office staff to Yellowknife, Watson Lake, Fort Smith and other centres as necessary; this procedure remains unchanged.

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

CANADIAN WILDLIFE SERVICES

Responsibilities

Surveys and inventories of wildlife resources; conducting research on wildlife species in relation to their habitat; collection and analysis of animal population and utilization data; recommending management procedures for particular species of economic importance; acting as consultants on fisheries and marine mammals; research, management, and administration of migratory birds under the Migratory Birds Convention Act; co-ordination of federal, provincial, and territorial action on common wildlife species, including such major problems as caribou research and management, predator control, and wildlife diseases studies.

Long-term Plans

To continue the studies of major wildlife resources with the ultimate object of establishing more adequate research facilities in the field; to extend research to less-known species; assess the success achieved in management of wildlife resources to date, and the potential success in this endeavour for the future.

Review of 1961 Operations

Mammalogical Projects

Caribou range studies were continued north of Great Slave Lake in order to assess the extent of forest fire damage and its effect upon plants used as food by caribou in winter.

The wolf study was continued, with special attention being given to the Thelon River drainage. Young wolves were captured, and will be kept in captivity in order to study their biology and behaviour.

Arctic foxes were studied in the Keewatin and Franklin Districts, particularly in the vicinity of Aberdeen Lake.

The distribution, biology, and ecology of polar bears were investigated on Southampton Island and in the vicinity of Cape Christian, Baffin Island.

An attempt was made to conduct an aerial survey of caribou on Baffin Island but meteorological conditions were so unfavourable that results were little more useful than those achieved during the preliminary survey the previous year.

An aerial survey of large mammals on the Queen Elizabeth Islands was completed during the summer in order to provide accurate information about their numbers and distribution.

A study, in co-operation with the University of Alberta, was conducted in Keewatin District to investigate the survival value of the relationship existing between female caribou and their newly-born young.

A study of the diseases and parasites of northern mammals was undertaken, with special attention being accorded to bison in Wood Buffalo National Park, reindeer near Inuvik, Arctic fox from Cornwallis Island, and beaver from southern Mackenzie District.

Studies of bison were continued in Wood Buffalo National Park and the adjacent part of the Mackenzie District with special reference to the mortality caused by high water in the deltas of the Peace and Athabasca Rivers. Attention was also given to delineating home range and movements of the remnant of wood bison in the Park so that some of them could be captured for transplanting elsewhere.

Ornithological Projects

Further studies of breeding waterfowl in the Anderson River Delta were conducted in the spring and summer.

A study of distribution, breeding success, and mortality of blue and lesser snow geese was carried out in the Nettilling Lake-Koukdjuak River area of Baffin Island. With the aid of Eskimo assistants, 11,744 blue and snow geese were banded during the period July 20th August 24.

A waterfowl banding operation on Southampton Island was carried out in co-operation with a university student working in the Boas River area.

A study of the life history, hunting, kill, and utilization of blue and lesser snow geese in James Bay was continued. Aerial surveys of whooping crane breeding areas in Wood Buffalo National Park were continued.

Plans for 1962

Mammalogical Projects

The caribou range study will be continued in the caribou wintering area between Fort Smith and the east arm of Great Slave Lake.

The wolf study will be continued in Keewatin and additional attention will be given to the vicinity of Wood Buffalo National Park where the use of poison for control has not been so intensive, and where there is a greater concentration of wolves.

Arctic fox studies will be continued in the Franklin and Keewatin Districts, and an attempt will be made to keep animals in captivity at Churchill to obtain comparative biological information.

The study of polar bears in the eastern Arctic will be continued, with special reference to the denning areas on Southampton Island and the adjacent area.

Caribou management studies will be given new impetus by the assignment of an officer to a specific program of federal-provincial co-operation. His duties will include hunter education, collection of management information, and an increased program of caribou tagging.

The investigation of caribou physiology will be continued, with an attempt being made to capture more caribou for laboratory studies.

Yukon big-game studies will be resumed with the re-establishment of a biologist at Whitehorse for that purpose.

Muskrat, beaver, and mink studies will begin on an experimental trapping area near Inuvik.

The beaver study in southern Mackenzie District will probably end.

Studies of diseases and parasites of northern animals will be continued, with special attention to bison, reindeer, and caribou, as well as foxes, bears, muskrats, and related aquatic fur bearers.

Investigation of bison ecology and movement will continue in Wood Buffalo National Park, and an attempt will be made to learn more about bison nutrition.

A number of young bison will be captured and transferred to holding and testing facilities near Fort Smith.

Ornithological Projects

A continuing study of breeding waterfowl in the Mackenzie Delta and Anderson River Delta regions will be conducted.

A waterfowl banding operation in the Perry River area carried out by a university party supported in part by the Canadian Wildlife Service.

The study of the life history, hunting, kill, and utilization of blue and lesser snow geese in James Bay will be continued.

An assessment of the winter distribution of sea-birds off the Labrador coast will be undertaken.

Aerial surveys of whooping crane breeding areas in Wood Buffalo Park will be continued.

NATIONAL MUSEUM OF CANADA

Responsibilities

Investigations relating to the archaeology, physical anthropology, ethnology, botany, zoology, and vertebrate palaeontology of the north, and the collection, preservation, and display of specimens required for research and public information.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

The Natural History Branch collected biological specimens in the Aberdeen Lake area, and mammal specimens in central Yukon.

The Human History Branch carried out archaeological excavations in central Yukon, and on Devon, Bathurst, Cornwallis, and Somerset Islands. An ethnological investigation was conducted at Fort Good Hope.

Plans for 1962

The Natural History Branch may conduct archaeological investigations along the Firth River, along Dolphin and Union Strait, along Juet Island in Hudson Strait, and on Button Point on Bylot Island. Ethnological investigations may be carried out amongst the Eskimos at Shingle Point in Mackenzie, Kutchin Indians in the Yukon Territory, and among the Lynx Point people of Hay River.

NATIONAL PARKS SERVICE

Responsibilities None at present.

Long-term Plans

Select and administer areas which contain representative features worthy of preservation as part of the National Parks System.

Review of 1961 Operations

After surveys in 1958, an area suitable for a future national park was selected in the south-west corner of the Yukon Territory in the vicinity of the St. Elias Range. The possibilities of mineral development present a problem. A proposal which would assist in meeting this problem has been drawn to the attention of the Council of the Yukon Territory. A wilderness reserve in the Brooks Range Area in the north-western part of the Yukon Territory is still under consideration. This reserve would be adjacent to a corresponding wilderness reserve which U.S. authorities have established on the Alaskan side of the border.

Plans for 1962

To investigate the national park potential of the valley of the South Nahanni, particularly the area from Virginia Falls to the junction with the Liard River. To reassess in the field the most promising areas for a national park in the Yukon in an attempt to overcome difficulties posed by conflict with mineral interests.

NATIONAL HISTORIC SITES DIVISION

Responsibilities

Administration of sites and structures of national historic importance.

Long-term Plans

Study of national history related to the Canadian North in order to select, preserve, and commemorate sites and structures of national historic importance.

Review of 1961 Operations

The reconstruction of the Palace Grand Theatre, Dawson, as an authentic period building with modifications to make it conform to Building Code standards, was proceeded with in view of the 1962 Dawson City Gold Rush Festival. The Theatre will serve as a focal point for the Festival. Cost of the reconstruction and the setting-up of theatre facilities will be approximately \$313,000. The sternwheeler Keno was refurbished and will also figure in the Festival.

Plans for 1962

To enter into an agreement with the City of Dawson for the operation of the Palace Grand Theatre and the sternwheeler Keno. To erect a memorial in Dawson calling attention to the historic features of the area. To mark the site of the original gold discovery. To continue the survey of sites and structures of national historic interest in the Territories.

COUNCIL OF THE NORTHWEST TERRITORIES

Responsibilities To exercise legislative powers comparable to those of a provincial legislature.

Long-term Plans

Enactment of legislation comparable to that of the provinces, and in keeping with changing conditions; gradual evolution toward provincial status with a representative and responsible government.

Review of 1961 Operations

The customary two sessions of the Council were held, at Ottawa in January, and at Fort Simpson in July.

The principal legislation dealt with during the January Session was the Appropriation Ordinance, 1961-62 in which the appropriation of \$5,136,084 was approved. In addition, amendments were passed to the Motor Vehicles Ordinance to provide a "careless driving" section to deal with a wide range of relatively minor traffic offences, and to the Municipal District Ordinance to bring the date of nomination and election of municipal councillors closer to December 31st (the date when defeated or returning councillors cease to hold office), and to clarify municipal power to enter into contracts providing transportation for school children.

The major piece of legislation passed at the July Session was the Child Welfare Ordinance which unified existing legislation dealing with child welfare and placed authority for the operation of the child welfare program with the Superintendent of Child Welfare and his officers. Two Ordinances authorizing the Commissioner to grant franchises to the Canadian National Railways Company for the installation and operation of telephone systems at Fort Simpson, Inuvik, Rae, Fort Resolution, and Fort Providences were passed. An Ordinance to Promote the Construction of New Houses, and to Improve Housing and Living Conditions in the Northwest Territories was passed, authorizing the Commissioner to borrow for the purpose of making second mortgage loans for new housing of C.M.H.C. standard, and also to provide for the administration of the scheme. In addition, amendments were made to the following Ordinances:

The Electrical Protection Ordinance, to allow the Commissioner to declare by order which edition of the Canadian Electrical Code was to be applied under the Ordinance;

The Game Ordinance, to clarify the intent of a number of sections in the new Ordinance passed at the July Session, 1960; to amend other sections and add new sections to facilitate the administration of the Ordinance; and to add a provision to allow black bear to be taken by holders of buffalo hunting licences;

The Hay River Municipal District Ordinance, to provide for a Council consisting of a mayor and six councillors, and to amend the method of replacing the mayor or members of the Council who vacate office during their terms;

The Insurance Ordinance, to bring the Ordinance into conformity with the standard legislation on insurance endorsed by insurance authorities of the Provincial Governments;

The Judicature Ordinance to combine the two judicial districts in the Territories and provide for a single clerk of the court, public administrator, and sheriff, based in Yellowknife;

The Liquor Ordinance, to allow a peace officer to arrest a person who, on reasonable and probable grounds, he believes to have committed, or is committing, or is about to commit, an offence against the Ordinance;

The Public Health Ordinance; to repeal the present schedule of communicable diseases and replace it with one conforming to the standard medical terms approved by the Dominion Council of Health;

The Vocational Training Ordinance, to increase the grants payable under the Ordinance;

The Workmen's Compensation Ordinance, to increase the benefits payable under the Ordinance.

Work on caribou conservation continued with the gathering of information on herd sizes, movements, distribution, and human usage. The joint predator control program with the provinces was continued, and the results indicated that the population of wolves had been reduced to a low level, and less rigorous control measures would now suffice.

During the third hunting season for buffalo in the Northwest Territories, two outfitters were licensed and thirty-four licences issued. Each hunter took the bag limit of one buffalo.

An open season for the sport hunting of big game by residents of the Northwest Territories was initiated. The season commenced on September 1st and closed on November 30th. The big game licence fee of \$10.00 entitled the holder to take Dall sheep, moose, and black bear in certain big game management zones. Seventy-nine licences were sold, and twenty-one moose and one bear were taken.

There was a substantial increase in the numbers of white fox, marten, mink, muskrat, wolf, and wolverine taken during the 1960-61 season. The take of beaver, squirrel, and weasel declined sharply, while fisher and otter takes remained about the same.

Prices for beaver, lynx, marten, mink, and otter showed increases while prices for white fox, muskrat, wolf, and wolverine were down. Prices for squirrel and weasel remained about the same. The value of furs taken in 1960-61 was estimated at \$1,200,000 compared with \$821,979, in 1959-60.

In August, the Territorial Liquor Store at Frobisher Bay was opened for the sale of beer over the counter, and for taking orders for spirits. Piles were placed for a new store and warehouse at Inuvik. A contract was let in December for a new retail store in the front part of the Yellowknife warehouse to replace the present retail store.

With the opening of the Territorial Liquor Store at Frobisher Bay a large part of the Eastern Arctic population now purchases its supplies from the Territorial Liquor system, and thereby contributes to Territorial revenues. A supply system is being designed for all liquor used in the Northwest Territories to be purchased through the Territorial liquor system. This will entail arrangements with provincial liquor commissions.

At its July session the Council agreed to proposals permitting the sale of liquor with meals on Sundays in licensed dining lounges and dining rooms, and the manufacture of home-brewed beer. Sunday opening for dining rooms and lounges was authorized by Regulation, and a Bill to amend the Liquor Ordinance to permit manufacture and consumption of home-brewed beer was prepared for the January, 1962 Session.

At the July session the Council agreed in principle to the recommendations contained in the Report of the Interdepartmental Committee on Federal-Territorial Financial Relations. When approved, this report will constitute the basis for an agreement covering Territorial revenues and expenditures between April 1st, 1962 and March 31st, 1967.

Discussions continued at both sessions of the Council concerning the political evolution of the Northwest Territories through the establishment of a separate Territory of the Mackenzie.

The Council's advice was sought on a long-range tourist development program involving the Federal Government, the Territorial Government, and private agencies concerned with the tourist industry.

The Council discussed proposals for expanding commercial fishing in the Territories without interfering with the domestic food supply or with angling operations. As a result of these discussions, certain additional areas have been opened to commercial fishing on an experimental basis.

During the year, the Great Slave Highway was opened as far as Yellowknife, and a ferry began at Fort Providence. The decision to go ahead with the Great Slave Lake Railway and to begin mining operations at Pine Point will have a significant effect on the economic development of the Territories.

Plans for 1962

Discussions will continue concerning the establishment of a separate Mackenzie Territory, and it is expected that a resolution for the consideration of the Federal Government will be prepared at the January Session on such topics as the eastern boundary of the Mackenzie Territory, the disposition of the residual portion of the Northwest Territory, the composition of the Council of the new Mackenzie Territory, the timing of the division, and the name of the eastern Territory.

The Fuel Oil Tax Ordinance and the Motor Vehicles Ordinance will be considered for amendment by the Council at the January 1962 Session to bring certain taxes and licences into line with the recommendations of the Interdepartmental Committee on Federal-Territorial Financial Relations.

COUNCIL OF THE YUKON TERRITORY

<u>Responsibilities</u>	To exercise legislative powers comparable to those of a provincial legislature.
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Long-term Plans

Enactment of legislation comparable to that of the provinces and in keeping with changing conditions; gradual evolution toward provincial status with a representative and responsible government.

Review of 1961 Operations

Legislation

The Council of the Yukon Territory was called for three sessions, the first being held from March 22nd to April 12th, the second from June 26th to July 6th, and the third from November 1st to November 29th.

During the first session of Council, eleven ordinances were passed. The first and possibly the most important of these was an ordinance granting a franchise to the Yukon Electrical Company for the distribution of power in the area of Carmacks. The balance was made up of minor amendments to the Old Age Assistance and Blind Persons Ordinance, the Business Licence Ordinance, the Taxation Ordinance, the Motor Vehicle Ordinance, the Municipal Ordinance, the Judicature Ordinance, the Engineering Ordinance, the Public Health Ordinance, and two supply Bills.

The Second Session dealt mostly with Lot 19 and the squatter problem in Whitehorse, and with housing. Four ordinances were passed in this connection. The first was an ordinance authorizing the Commissioner to purchase certain lands from the British Yukon Railway Company for sale in turn to the Corporation of the City of Whitehorse, and to loan money to that Corporation. The second authorized the Commissioner to borrow up to \$100,000. Seven other ordinances were passed, the most important being the Ordinance to amend the Workmen's Compensation Ordinance. This resulted in increased benefits being paid for burial expenses, and increased benefits to widows and to dependent children. The others were comparatively minor amendments to the Municipal Ordinance, the Liquor Ordinance, the Motor Vehicle Ordinance, the Game Ordinance, and the Fur Export Ordinance.

The Third Session was a history-making session, in that it was the first session for the new seven member Council, the number having been raised from five. Five ordinances were passed. The first amended the Jury Ordinance by deleting the clauses which precluded a woman being called for jury duty at criminal trials. The second was a minor amendment to the Municipal Ordinance. The third was an amendment to the Labour Provisions Ordinance, establishing six statutory holidays in the Yukon Territory. The fourth and fifth dealt with supply. Sessional papers presented included one submitting extensive proposals on fire prevention; one on civil defence; one dealing with the Dawson City Gold Rush Festival; one proposing a National Park for the Yukon; and one dealing with a proposed agreement for Separate Schools. Most of this session was devoted to consideration

of the draft report of the Interdepartmental Committee on Federal-Territorial Financial Relations, as it concerns the Yukon. This committee was appointed by the Deputy Minister of Northern Affairs and National Resources to recommend the terms of an agreement for the next five years, as the present agreement expires on March 31, 1962. In this report, the scope of the existing functions has been examined and the need for new activities taken into consideration. Recommendations deal with education, health, welfare, roads, airports, assistance to municipalities, elections, natural resources, civil service, and administration of justice, particularly as regards sharing the cost of policing. Recommendations on revenue deal with the motor vehicle fuel tax, the motor vehicle licence fees, the real property tax, liquor revenues and liquor tax, and income tax. The Committee also recommends changes to the health services in a new health services plan. Members of the Council made a number of recommendations with a view to amending certain portions of the report, including the health services plan.

Education

Enrolment in the public and separate schools continued to increase, reaching a total of 2759 students by December 31. New schools completed included the twelve-room Takhini Elementary School just outside Whitehorse, the four-room Watson Lake Elementary-High-School, the two-room Kluane Lake School at Mile 1083, and the two-room Beaver Creek School at Mile 1202. Eight classrooms were added to Christ the King Separate High School in Riverdale. Construction began on a new secondary school for Whitehorse, containing industrial art shops, art and music rooms, commercial rooms, science and home economics laboratories, and sixteen standard classrooms. This will cover Grade XIII in the Yukon for the first time. A contract was also let for a vocational training school in Whitehorse.

Territorial Department of Public Works

New subdivisions were opened and others extended. Local roads were extended and drainage installed on Two Mile Hill for a future paving programme.

The following construction was carried out - Camp Takhini School; Four Room School and Auditorium, Watson Lake; New Schools and Teacherages at Beaver Creek and Destruction Bay; Senior Citizens' Home in Dawson; Public Library in Whitehorse. A start was made on the new High School in Whitehorse. Additions were made to the Watson Lake Primary School and the Elsa School.

On behalf of the Federal Government, the Territorial Government carried out major reconstruction on the Stewart Crossing - Dawson Road, the Whitehorse - Keno Road, and the Canol Road. Four bridges were replaced, and one constructed, along the Canol Road, and one at Willow Creek. Material was purchased for the Corkery Creek Bridge replacement.

Other work included extensions to campground and picnic areas, and completion of various firestores, office and radio buildings, and garage and workshop buildings. A lookout tower and buildings were completed in the Whitehorse area.

A road to the fire lookout site at Watson Lake was finished and material purchased for the tower.

The Forestry Administration Building was constructed, and maintenance carried out on all buildings of the Department of Northern Affairs and National Resources.

On its own behalf the Federal Government replaced the Ogilvie Bridge across the Klondike River at Dawson and the McQuesten River Bridge with new structures, and started work on a bridge across the Klondike River on the Flat Creek-Eagle Plain Road. Construction of the Flat Creek-Eagle Plains Road and the Watson Lake-Ross River Road continued with some winter clearing being carried out on the latter. Construction began on an access road to the Canada Tungsten Mining Corporation's property at Flat River, N.W.T., with 80 miles of the route being the direct responsibility of the Federal Government, and the remaining 40 miles being built by the Corporation on a cost-sharing basis.

Resources

The forest fire season was one of the lightest on record with 50 fires burning a total of approximately 95,000 acres; 45 fires burned only 200 acres in protective and accessible areas. The remaining area resulted from five fires in inaccessible regions where economical control was not possible. Approximately 4,000,000 feet board measure of wood products were produced locally. The Forestry Section of the Northern Administration Branch assumed more direct control of timber administration and management in the Territory.

Mining activity increased considerably in the latter part of the year, with extensive exploration work in the Watson Lake and Mayo areas. A number of promising silver and copper showings were located in these areas. There was also increased activity in the Whitehorse copper belt and a copper mine near Haines Junction went into production. A large volume of ore was shipped from this mine to Japanese markets. Silver mining continued in the Keno area along with summer gold dredging in the Dawson area. A grant from the Federal Government to mining companies for tote trail construction. Oil and gas exploration was carried out in the Eagle Plains area north of Dawson and in southeastern Yukon.

The new Territorial Land Regulations, prepared late in 1960, were adopted. They provide for maximum availability of land to the public with minimum controls necessary to ensure equitable land disposition. There was an increase in land interest, both tourists and residents applying for residential, commercial, and agricultural land.

Tourism

The number of summer tourists increased and preliminary work began in connection with the 1962 Dawson City Gold Rush Festival. The 28 campgrounds maintained by the Forestry section proved very popular.

Municipal

The Central Mortgage and Housing Corporation began the preparation of a Metropolitan Plan for greater Whitehorse on behalf of the Federal, Territorial and City Governments, including the City of Whitehorse and six subdivisions on the Alaska Highway, all within a ten mile radius of downtown Whitehorse.

Approval of the purchase of land and the installation of water and sewer services by the City in Lot 19, as part of the squatter resettlement program in the Whitehorse area, was refused by the ratepayers of Whitehorse. They also rejected a proposal to include an area west of Eight Avenue within the City limits. The Federal and Territorial Governments will however, move squatters' houses from Crown Lands to Territorial subdivisions including a new subdivision in the Marwell area.

The ratepayers of Whitehorse approved an extension to the Riverdale Subdivision of approximately 200 lots. The majority of available lots in subdivisions throughout the Territory have been sold and extensions are being planned for some of these areas. A new subdivision was surveyed and registered for the town of Mayo. Regulations for all subdivisions were reviewed, and are undergoing substantial revision.

A review and report on fire fighting facilities in Whitehorse was prepared by the Dominion Fire Commissioner. Negotiations are underway by Federal, Territorial and City Governments for the implementation of this report. In conjunction with these recommendations, the Territorial Government is contemplating a completely rewritten Fire Protection Ordinance.

Second Mortgage loans became available to residents of the Yukon Territory who wish to purchase or construct new homes and who have obtained first mortgage financing under N.H.A., low cost housing and low rental apartments were approved in principle.

The ratepayers of Dawson gave their approval to the granting of a telephone franchise to Canadian National Telecommunications.

Welfare

Much was accomplished towards the development of existing welfare programs. Standards of service were greatly improved to meet changing conditions and existing needs.

The Territorial Department of Welfare was increased to meet the increasing caseload and as part of the overall plan for a more extensive welfare service. In November a branch agency was opened in Dawson with a welfare officer responsible for Dawson, Mayo, Elsa, Keno, Calument, Stewart Crossing, and Pelly Crossing. This area was previously covered from Whitehorse.

Construction of a Senior Citizens' Home in Dawson City was completed and ready for occupancy in November, providing accommodation for those aged male and female residents in receipt of Territorial supplementary assistance, who are physically and mentally capable of caring for themselves but whose own living accommodation is unsatisfactory.

Since April 1960, the Territorial Government's Department of Public Welfare has provided child welfare services to Indians under a special financial agreement with Indian Affairs Branch. More emphasis has been placed on preventive casework among Indian families, but it has not been possible to provide fully the extensive preventive service needed. Planning continued for a more adequate preventive and remedial service among the Indians, and Indian-White families, including additional professional staff, on a cost-shared basis with the Indian Affairs Branch.

Public Welfare services provided in the Yukon Territory were as follows:

Public Assistance - Categorical Aid:

Old Age Assistance
Blind Persons Allowance
Disabled Personal Allowance

General Assistance:

Social Assistance
Supplementary Allowances
Medical and Health Services to welfare recipients.

Family Service

A new service designed to provide guidance and counselling to help resolve family problems and prevent family breakdown.

Child Welfare Services

Child Protection
Child Care
Home Findings
Adoption Program
Services to Unmarried Mothers

Plans for 1962

The Territorial Department of Public Works construction program includes entering into a contract for a vocational school and dormitories, duplex and multiple residences, a new high school, and a senior citizens' home in Whitehorse, schools at Porter Creek and Carmacks, a nursing station at Watson Lake and a health station at Ross River.

The Federal Government will complete the access road to Canada Tungsten Mining Corporation's property at Flat River and continue construction of the Watson Lake-Ross River Road, An exploratory soils programme will be carried out on the route of the Flat Creek-Eagle Plain Road.

The Central Mortgage and Housing Corporation has agreed to prepare a plan for Watson Lake dealing mainly with land use and future growth.

NORTHERN ADMINISTRATION BRANCH

OFFICE OF THE ADMINISTRATOR OF THE ARCTIC

Responsibilities

The administration of the districts of Keewatin and Franklin, except Victoria and Banks Islands, and Eskimo Affairs in northern Quebec.

Long-term Plans

To decentralize as much responsibility and authority as possible to regional and local field officers; to co-ordinate programmes of education, welfare, and economic development; to carry out and supervise established policies in the field.

Review of 1961 Operations

Organization

The regional headquarters at Churchill was maintained with area offices at Rankin Inlet, Coral Harbour, Eskimo Point, and Baker Lake. Another was maintained at Frobisher Bay, with area offices at Cape Dorset, Igloolik, and Hall Lake. A new regional headquarters was established in Ottawa on October 1 for northern Quebec, with area offices at Fort Chimo, Sugluk, Port Harrison, Great Whale River, and Povungnituk.

The Arctic District office is made up of eight sections; education, engineering, personnel, welfare, financial administration, property building and equipment, office services, and industrial. The last of these was added during the year.

Economy

Permanent wage employment remained constant, particularly in the large centres of Frobisher Bay, Churchill, and Rankin Inlet. Seasonal employment for Eskimos as stevedores, members of mining explorations crews, and workers with government survey parties, construction teams, etc. was also at about the same level as in 1960.

The urgent need for the diversification of the economy of those people living on the land, especially in parts of Keewatin and northern Quebec, continued and became more serious owing to low prices for white fox pelts. Much effort was expended towards the development of local economy projects to provide alternative sources of income. Commercial fisheries were operated on Baffin Island, in the Ungava area and the East coast of Hudson Bay. The production of high quality Eskimo stone carvings continued to supply various centres, earning considerable amounts for the producers. There was a gradual increase in the number of tourists, promising well for the future.

The production of country food at Whale Cove resulted in a considerable decrease in relief issues. Surplus Whale Cove food was sold locally in Rankin Inlet. A survey of seal abundance in the Port Burwell area showed good potential for development in 1962. The preliminary report of the resources survey of the Southampton Island area suggested that this district could support a larger population. Field officers at various establishments carried on fisheries for domestic use.

Engineering Services

Construction crews, operating out of Churchill, Fort Chimo, Frobisher Bay, and Great Whale River under the direction of the Arctic District Engineer, carried out work in some 27 communities. The following construction was completed: 11 family-type hostels; 14 three-bedroom houses; 13 two-bedroom houses; 5 school complex units; 4 one-bedroom houses; 6 warehouses; 4 workshop-warehouses; 4 National Health and Welfare Field Stations; 3 garages; 2 powerhouses; 3 bulk oil storage tanks; 1 bathhouse and laundry; 2 power warehouses; 1 administration building at Churchill and several other structures for other Government departments working in the north. Considerable alterations and renovations were made to buildings taken over from other departments and obtained through Crown Assets Disposal Corporation.

At George River the rough framing materials for three residences, a school and a powerhouse were produced locally by a saw mill operated by the Co-operative. The finishing materials only will be shipped in in 1962.

A 250 kilowatt plant was installed at Great Whale River along with a 315,000 gallon bulk oil storage tank.

Underground water and sewage systems are being provided at Akudlik (Churchill) and Great Whale River. Neither system was completed but that at Great Whale River is in use and that at Churchill in partial use. The system at Great Whale River includes an underground hot water system to supply heat to all departmental buildings there.

Contracts were arranged with consulting engineers for water and sewage investigations at four other locations in northern Quebec. Preliminary reports were reviewed for Port Harrison and Fort Chimo. This continuing project will supply the department with the information necessary to provide these facilities on a community basis at planned intervals.

A total of 103 low cost houses was provided at several settlements for Eskimos. Most of the erection was done by prospective Eskimo purchasers, with supervision and advice from the engineering section.

Property Building and Equipment Section

Storage and shipping operations were again carried out at Montreal where approximately 3,800 tons of supplies, excluding petroleum products, were received and shipped on the annual sealift. Similar storage and shipping operations were carried out at Churchill where 666 tons of freight, exclusive of petroleum products, were shipped north. In addition, 375 tons were directed to other ports for shipment north.

Industrial Section

Eskimos participated in catching, processing and freezing fish for shipment to southern Canada at Koksoak and Whale Rivers (salmon and char), Richmond Gulf (sea trout and whitefish), George River (char) and Port Burwell (char and cod). At Frobisher, Arctic char and cod were sold locally. Handicrafts were produced by Eskimos at Port Harrison (dolls, sealskin toys), Port Burwell and Great Whale River (sealskin hats and other handicrafts), Cape Dorset and Povungnituk (carvings and prints) and Sugluk (carvings and handicrafts). On the George River a logging and milling operation produced power poles and most of the timber required for the construction of local departmental buildings.

Education

Sixty-five Federal classrooms and five special classes in homemaking and industrial arts were in operation in 25 schools with a total enrolment of 1,531, composed of 1,388 Eskimos, 39 Indians and 104 others. In addition, part-time Mission Schools operated at Maguse River and Repulse Bay; grants to these schools were based on the number of pupils. An additional school teacher was employed to conduct summer schools in camps in the Lake Harbour district during the months of June to August inclusive, and at many places the regular teaching staff continued to teach during the summer months in camps outside their respective settlements. Hostels housing 8 pupils each are being constructed to enable children to attend school regularly. At present there are hostels of this type at Baker Lake, Great Whale River, Cape Dorset, Port Harrison, and Payne Bay. Adult education classes in homemaking, child care, English, sewing, handicrafts, cooking, etc., were conducted in many communities. Instruction was also given by specialists hired under contract for a certain number of hours instruction each week. An orientation course for new teachers was held in Ottawa during the last part of August, and teachers' workshops were held in Churchill, Frobisher Bay, and Great Whale River for teachers to examine their problems and improve teaching methods.

With the appointment of A Vocational Training Superintendent, the vocations programme was increased and over 100 Eskimos received training in outboard motor care, clerical duties, theatre management, carpentry, catering, diesel plant operation, photography, prospecting and mining, hairdressing, and heavy duty equipment operation, and as nurses aides. Of the 21 students from the Arctic District who attended the heavy duty equipment operators' course at Yellowknife, five returned in October to take the second course in mechanics.

Welfare Section

A regional superintendent of welfare was appointed to the staff of the Keewatin office at Churchill. Difficulty in recruiting staff led to a number of positions remaining unfilled, and resulted in many operations being suspended at the Rankin Inlet Rehabilitation Centre.

In northern Quebec, welfare matters continued to be carried out by northern administrators and teachers, supervised by the welfare staff of the Arctic District office.

An Infants' Creche and Children's Receiving Home at Churchill continued to care for children temporarily separated from their parents through illness or other reasons.

In conjunction with the Northern Health Services policy of prenatal and post-natal care a welfare building was set aside at Churchill to provide accommodation for expectant mothers and mothers of new born children. This represents an extension of existing services to transient Eskimo patients.

The Rehabilitation Center at Frobisher Bay continued to serve physically and socially handicapped persons through casework counselling, through programmes of fundamental education on such matters as homemaking and child care, through pre-vocational training, and through training in the operation of small business enterprises. The Barber Shop, originally set up under the supervision of the Centre, became economically viable, and ownership and management was handed over to one of the Centre's graduates. A number of other rehabilitants were referred for further vocational training to fit them for individual or co-operative ownership or management of small commercial enterprises.

General

A welfare team was provided for the annual Eastern Arctic Medical Patrol on C.M.S. C.D. HOWE. Ottawa officers also made a number of inspection trips. A conference was held in Ottawa for senior field officers and their Ottawa counterparts to discuss problems of mutual concern. A meeting was held with the Federal Electric Corporation to discuss and resolve matters concerned with the DEW Line.

Plans for 1962

Field stations will be strengthened to cope with increased responsibility. New administrative posts are scheduled for the Belcher Islands and Payne Bay. Special officers will be assigned to the Keewatin regional office for the industrial development and game management. Eskimos will be trained as guides and assistance at Tourist camps at Whale Cove and Baker Lake. New projects include canoe building at Great Whale River, sealing at Port Burwell, logging on the Koksoak River, and fishing at Payne Bay. The Frobisher Eskimo Co-operative intends to construct houses.

THE ADMINISTRATOR OF THE MACKENZIE

<u>Responsibilities</u>	General administration of the District of Mackenzie, Banks Island and Victoria Island, and Wood Buffalo National Park.
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Long-term Plans

To extend the decentralization of northern administrative affairs to form an administration for a new Territory of Mackenzie.

Review of 1961 Operations

Decentralization was further effected in financial and personnel administration with the establishment of a District Financial Control Office and a District Personnel Office at Fort Smith. A Municipal Affairs Officer was also appointed late in the year, emphasizing the increasing importance of municipal growth. The Yellowknife Region was officially constituted, with three areas subsidiary to it.

The District Engineering Office took over the maintenance of the Mackenzie and Great Slave Highways. This system has three hundred and eighty-eight miles of highway and includes the operation of a forty-seven ton ferry. Seventy-four major construction projects of \$10,000 or over and forty-six minor projects under \$10,000 were completed. Certain works were undertaken for the Territorial Government, including construction and conversion of warehouses at Inuvik and Yellowknife, and the construction of numerous picnic shelters, settlements roads, sidewalks, and related facilities.

Policies were considered under which fuel and power could be sold to non-Government operations. Bulk oil tanks were erected at several locations and power distribution systems were started at Tuktoyaktuk and Fort Providence.

The annual buffalo round-up, testing and slaughter was carried out at Sweetgrass, Wood Buffalo National Park. Two thousand and sixty animals, a record number, were tested for tuberculosis, and the incidence found to be greatly reduced. Three hundred and ninety reactors were held for slaughter. In co-operation with the Canadian Wildlife Service, a program to preserve the true Wood Bison species was undertaken.

This year was one of the worst forest fire years on record, with a total of 195 fires burning an average of 4,000 acres per fire. Over 200 men were conscripted to fight fires and, for the first time in the District, water bombing from aircraft was carried out.

Trappers councils were in operation in nine Mackenzie Valley settlements, providing a forum for discussion of game and settlement problems. Some councils were able to operate completely on their own, while others required varying degrees of guidance and assistance from local Game Management Officers. Sport hunting of moose, sheep, and black bear was opened for the first time to residents in certain localities. A buffalo sport hunting season was held for the third consecutive year and proved to be a moderate success. Barren ground caribou continued to be found in very low numbers. In general, fur prices in the District remained quite low, and there was no shortage of pelts.

Although no new schools were opened during the year, the school population increased by approximately 300 students to 3,900. Preparations proceeded for the opening in 1962 of new schools at Flat River, Pelly Bay, and Gjoa Haven. Along with its regular program, the Vocational Training Section, directed an extensive program of evening classes for adult education. These classes, cover many different vocations, were held in almost all District settlements where qualified instructors were available.

The Industrial Division placed resident Project and Co-operative Development Officers at Inuvik. Several projects making use of local resources and labour were successfully operated, or reached an advanced planning stage.

The welfare program provided basic services to meet food, shelter, and clothing needs. Several large welfare projects were operated successfully, particularly in the Inuvik Region. Two transit centres, an old folks' home, and a children's receiving unit came into existence, and local Eskimo or Indian people were hired to manage and operate them. The Welfare housing program began and by the year's end twenty units were nearing completion.

Plans for 1962

A District Industrial Division Office will be established in Fort Smith.

New projects will assist in raising income levels in the more depressed areas. Welfare housing programs to provide shelter to old, disabled and other dependent people will be increased.

The new schools at Flat River, Pelly Bay and Gjoa Haven will be opened in the fall.

Emphasis will be placed on increased participation by residents in Government at the local and community level through the promotion and encouragement of community societies, local advisory committees, development areas, school districts, and municipal councils.

EDUCATION DIVISION

Responsibilities

To operate a school system for all children in unorganized areas of the Territories. The Territorial Government is responsible for educating all children who are not registered Indians or Eskimos.

Long-term Plans

To provide basic elementary and secondary education for all children in the Northwest Territories and Eskimo children in northern Quebec and vocational education to all children and young adults showing interest and aptitude.

Plans are underway to provide school accommodation for all children in these areas by 1968.

The vocational program at both the high school level and the post high school level is being broadened to meet the particular needs of individuals and work situations in the North. Education beyond the high school level is being encouraged through increasing opportunities for high school graduates to receive scholarships and bursaries.

A gap is developing rapidly between the level of education of children and adults. An adult education program will be provided to reduce this gap and to help adults adjust to the changes taking place in the Northwest Territories.

Review of 1961 Operations

A separate school district, the third school district in the Northwest Territories, was organized at Hay River, and construction began on a six-classroom school. Seven classrooms were added to the federally operated school system and an additional twenty-six classrooms were under construction, sixteen of them replacements. Three additional family-type pupil residences, accommodating eight pupils each, were constructed and an additional fifteen were begun.

The increase in facilities was reflected in additional enrolment. On September 30, there were 2013 Eskimos, 1191 Indians and 2170 other pupils giving a total of 5374. This was an increase of 350 pupils over the figure for March 31 and represented 56%, 32% and 93% of the children of school age in the respective groups. The vocational education program had 333 pupils registered in courses at various locations; 159 Eskimos, 86 Indians and 88 others. In the adult education field, teachers (using school facilities) offered evening and home-making programs. Community development officers, special project officers, administrators, and others also participated.

Plans for 1962

Construction of thirteen new federal classrooms will be started in the Arctic District and eight in the Mackenzie District. A two-classroom mine school will open in the Mackenzie District.

Federal estimates provide \$4,137,000 for school construction, alteration, or improvement; \$1,562,000 is for the Mackenzie District and \$2,575,000 for the Arctic District.

Specialists will be added in various fields to develop curricula. Teacher participation will be through regional teacher's conferences, workshops, and local teacher curricula committees.

Approximately 400 students will receive vocational training at Yellowknife, southern Canadian schools, in special courses. Regional Selection and Placement Officers will begin a selection and placement service.

An adult education specialist will be appointed in the Arctic to help expand the adult education program.

ENGINEERING DIVISION

Responsibilities

Planning and design of new construction; construction and maintenance of roads, building, and utilities; operation of power plants, water and sewerage systems, heating plants, and other electrical and mechanical equipment; provision of engineering assistance for settlement and town planning; site and soil investigations; investigation of northern building problems; provision of engineering assistance to the governments of the Yukon and the Northwest Territories.

Long-term Plans

To provide more economical, aesthetic, and functional structures, and to construct roads giving easy access to the natural resources in the north. To provide a field engineering staff in the Northwest Territories that can eventually form the basis of a Territorial engineering staff.

Review of 1961 Operations

Planning and Design

The continuing program of investigation and design has led to buildings that are more functional, pleasing, and economical to construct. Several bulk oil installations were made to replace drum storage. Steps toward simplifying purchase contracts were made, and factory inspection instituted to ensure better products. New designs and more complete plans and specifications have eliminated the former "performance" documents, and established control over the ultimate product. A policy to provide subsidized sewer and water facilities to settlements in the Yukon and Northwest Territories was approved. Approval was also given to the provision of power at cost from Departmental power plants to private consumers. The sale of fuel oil from Departmental bulk oil storage to private consumers was approved in principle.

Construction and Maintenance - Yukon Territory

Only exterior painting and landscaping remain to complete the new Forestry Administration Building at Whitehorse. Five office and radio buildings, six ready firestores buildings, and access roads to proposed sites for two lookout towers were constructed. Improvements were made to two residences and minor finishing applied to various garages and patrol cabins.

On the Whitehorse-Keno Road reconstruction cost about \$185,000 including material purchased for the Corkery Creek Bridge, and culverts for the Silver King Bridge replacement.

On the Stewart Crossing - Dawson Road minor clearing was carried out between Miles 21 and 30, and staking completed between Mile 0.0 and 0.6. Surfacing from Mile 9.6 to Mile 21 was completed by contract at an approximate expenditure of \$35,000. Under a \$97,000 contract with John A. MacIsaac 8.7 Miles remain to be reconstructed from Mile 60 to Mile 79.6. Except for 5.5 miles, reconstruction between Mile 45 and Mile 60 is complete under a \$62,000 contract with Proctor Construction Limited. The Yukon Territorial Government spent \$53,000 on day labour between Mile 100.8 and Mile 104. Except for minor painting both the McQuesten River Bridge and the Ogilvie Bridge were completed under Department of Public Works contracts.

On the Canol Road about \$40,000 was spent, including the replacement of four bridges at a cost of \$28,000 and the construction of a foot bridge across the Pelly River.

The Flat Creek - Eagle Plain Road was completed to Mile 72, and a 29 mile tote road constructed to provide gravel. A bridge at Mile 1 was being built over the Klondike River by Fraser and Rice Construction Limited under a \$261,000 contract supervised by the Department of Public Works.

On the Watson Lake-Ross River Road grading was completed to Mile 66 and gravelling to Mile 60. A contract was awarded for construction of a bridge across the Tuchitua River. Clearing of the right-of-way between Mile 68 and Mile 100 was carried out as a winter work project. From the Ross River end of the road, clearing was completed for 46 miles. Construction of a bridge over the France River was deferred to 1962, following the redesign of the bridge to a 24 foot width. A temporary wooden pile bent bridge was built to enable construction to proceed. Bailey bridges were erected by the Royal Canadian Engineers at Mile 21 and Mile 23 on the Nahanni Range Road. Field location surveys were completed and cross-sections and earth work calculations began.

Approximately \$43,000 was spent during the year on improvements to the Boundary Road between Dawson, and the Yukon-Alaska Boundary.

The following buildings were virtually completed:

- 28 three-bedroom houses,
- 14 two-bedroom houses,
- 5 one-bedroom houses,
- 2 apartment units or buildings,
- 8 schools or vocational training shops,
- 13 hostels, transient centres, children's receiving homes,
or rehabilitation centres,
- 3 offices or administration buildings,
- 30 workshops, powerhouses, or warehouses,
- 3 freezers, refrigerated warehouses, or ice houses,
- 14 homemaking cabins, patrol cabins, implement sheds, sewing
centres, P.O.L. sheds, or handicraft shops.

- 6 nursing stations, or field stations for N.H. & W.,
- 1 firehall,
- 15 Garages,
- 2 bunkhouses,
- 1 bathhouse/laundry,
- 11 bulk oil storage tanks,
- 1 community hall.

The following buildings were partially completed or have been stockpiled for construction next year:

- 8 three-bedroom houses,
- 4 two-bedroom houses,
- 7 one-bedroom houses,
- 10 schools or vocational training shops,
- 13 hostels, transient centres, children's receiving homes,
or rehabilitation centres,
- 1 office or administration building,
- 18 workshops, powerhouses, warehouses,
- 6 freezers, refrigerated warehouses, ice houses,
- 13 homemaking cabins, patrol cabins, implement sheds,
sewing centres, P.O.L. sheds, or handicraft shops,
- 1 fire tower,
- 1 nursing station, field station,
- 5 garages,
- 1 bathhouse/ laundry,
- 4 bulk oil storage tanks,
- 2 community halls,
- 1 bakery.

Over one hundred low-cost houses were purchased for resale to Eskimos. A number of low-cost prefabricated units were also purchased for sewing centres, Eskimo workshops, etc.

Consulting engineers were employed to investigate possible water and sewer systems at Fort Resolution, Coppermine, Tuktoyaktuk, Fort Good Hope, Fort Chimo, and Port Harrison, and to prepare the final design for water and sewer systems at Fort Norman, Fort Providence, and Rae. The water and sewer system servicing Northern Affairs' buildings at Churchill was in partial operation.

On August 23 the M.V. "Johnny Berens" began to provide a ferry service where the Great Slave Highway crosses the Mackenzie near Fort Providence. All contracts were completed on the Great Slave Highway from Fort Providence to Yellowknife, and on the extension of the Mackenzie Highway from Enterprise to Fort Providence.

Reconstruction of the Hay River Highway between Hay River and Enterprise was completed except for final gravelling. Grading of the 26 miles of the Mackenzie Highway south of Enterprise was completed, and only gravelling remains.

On the Yellowknife-MacKay Lake Road, grading and gravelling has been completed from Mile 0 to Mile 20. Plans and tender documents have been completed for the section from Mile 20 to Mile 80. Work is underway on the construction of a bridge over the Yellowknife River at Mile 20.

On the Fitzgerald-Rocky Point Road, 21 miles were completed and two bridges constructed.

Work on the Peace Point-West Boundary Road in Wood Buffalo Park was deferred but some work was carried out from Peace Point to Pine Lake.

Survey of the Hay River - Pine Point - Fort Smith road was begun, and plans and quantity estimates completed for the Fort Simpson Airport Road.

Reconstruction of local roads was carried out at several places and the regular maintenance program on roads was continued.

Mechanical Equipment Operations

Records of Branch Equipment and Vehicle holdings were maintained and extended. The operational costs of motor vehicles were recorded, and records are gradually being expanded to include construction equipment. Arrangements were made for the supply of the equipment required for the diesel electric generator operator's courses for Eskimos at the R.C.E.M.E. School at Barriefield. Specifications were prepared for some of the larger boats purchased during the year, and inspection and acceptance of these boats was arranged. Specifications for the manufacture and assembly of a Fish Reduction Unit for the Mackenzie Delta Fishery were written, and the plant was inspected and tested before delivery. Arrangements were made for the repair of equipment and plants when necessary. Specifications were prepared for approximately \$700,000 worth of equipment and vehicles proposed for purchasing in 1962-63. Arrangements were made for the Department of National Defence (Inspection Services) to inspect equipment and vehicles prior to acceptance of shipment. Eighty-five percent of the equipment and vehicle requirements in the Mackenzie Highway System have been purchased and delivered to the site.

Town Planning

The Frobisher Bay development was approved in a reduced version involving an estimated total expenditure of \$12,500,000. Consultants were appointed and preliminary construction contracts should be awarded early in 1962.

Water and sewer investigations continued in both the Eastern and Western Arctic.

A program to obtain air photography and precise ground control at all northern settlements where the Department of Northern Affairs and National Resources has an interest was completed. Detailed topographic compilations should be completed by 1 May, 1962, and field engineering information by 1 December.

Technical Investigation

Investigations into types of material and equipment for northern installations continued, involving both conventional and new materials. Liaison with other government departments and agencies and with producers was maintained.

Plans for 1962

Yukon Territory

The major item of building construction is a proposed territorial gaol at Whitehorse. This will be a two-year program with work to start in 1962. A Forestry warehouse, a staff house, seven P.O.L. sheds, four fire towers, and landscaping around various buildings constitutes the remainder of the building program in the Yukon Territory. Under the Road Program the third year of a four-year program of reconstruction on the Whitehorse-Keno Road will be carried out. The Stewart Crossing-Dawson Road should be completed during 1962. The reconstruction program on the Canol Road will continue, as well as the construction programs on the Boundary Road and the Watson Lake - Ross River Road. The Nahanni Range Road should be completed during 1962.

Northwest Territories

Community and land use plans will be prepared for settlements on the basis of engineering information, and data collected by the other divisions on social, economic, and administrative aspects of each community. The major building program in the Northwest Territories in 1962 will be the start of construction of a \$12,500,000 administrative center at Frobisher Bay. The program will be spread over a four-year period. Alterations or improvements will be made to departmental buildings. Additional schools, hostels, warehouses, workshops, staff accommodation, Eskimo dwellings, power distribution systems, water and sewer facilities and a Territorial gaol will be constructed and new power plants installed. Reconstruction will be continued on the Mackenzie Highway from the Alberta Boundary to Hay River as the fourth year of a five year program. Only such minor items as sign posts are required to complete the Great Slave Lake Highway. Work on the Yellowknife - MacKay Lake Road will continue, and a start will be made on the first year of a five-year construction program on the Hay River - Pine Point - Fort Smith Road. Additional work will be carried out on the Fitzgerald - Bell Rock Road, and the Pine Lake - Peace Point - West Boundary Road. Reconstruction of the Fitzgerald - Hay Camp - Rocky Point Road and the Rocky Point - Carlson's Landing - Peace Point Road as well as all roads and trails within Wood Buffalo Park will be undertaken. The Fort Simpson Airport Road will be reconstructed and location surveys on the N.W.T. portion of the Fort Nelson - Fort Simpson Road will be made.

INDUSTRIAL DIVISION

Responsibilities

Stimulation of area and community development and industrial growth in the Northwest Territories.

Long-term Plans

Area Development

To improve the local economy by area planning studies, improved harvesting of food resources, development of cottage-type industries, low-cost housing, and co-operative enterprises. This involves assessing available resources and planning their development and marketing.

Industrial Promotion

To assess the possibilities of establishing small business and industries, including tourist development, and , where feasible, to encourage their development. This involves market research and development in relation to the foods and goods which can be produced for marketing in the Territories and to the south.

Community Planning

To provide a central planning service to assist communities in the development of physical and municipal facilities.

Review of 1961 Operations

Area and Economic Surveys

An economic survey was carried out in the Southampton Island-Repulse Bay-Wager Bay area. Recommendations were made aimed at expanding the economy of the area, improving the resource use, and raising living standards. The renewable resources of the area are thought to be capable of sustaining a larger population.

Community Planning

A program to relocate squatters in Whitehorse was launched, and assistance given to C.M.H.C. in drawing up a metropolitan plan for Whitehorse. Community planning specialists carried out a study of the planning needs of Inuvik, Aklavik, and Dawson. Frobisher Bay was visited to help in the provision of subdivision and housing plans to a group of Eskimos interested in co-operative housing. Programs were approved whereby the Federal government will pay the costs of planning all unincorporated settlements in the north.

Industrial Promotion

Meetings were held with Boards of Trade and business men throughout the Mackenzie District to discuss industrial development. Correspondence was conducted with private individuals and business firms concerning the economic possibilities of the Northwest Territories.

Market Research

An investigation was made of the market for buffalo meat in Canada and the United States and a new marketing approach established. Following an extensive promotion program the total supply of buffalo meat was sold by the release date of January 10, 1962, and a substantially higher financial return was achieved for the government. Additional markets were established for the expanding production of Arctic char and handicrafts and immediate markets obtained for salmon and sea trout.

Eskimo Graphic Art

Over 3,000 sealskin and stone-cut prints were produced by the West Baffin Eskimo Co-operative, and some experimental prints by the Povungnituk Co-operative. The Canadian Eskimo Art Committee, composed of eminent art authorities from Ottawa, Montreal, and Toronto, was established to advise on graphic art.

Tourist Development

Tourist traffic into the Northwest Territories increased by an estimated 25% with expenditure by tourists estimated at \$600,000. A major factor in the increase was completion of the extension of the Mackenzie Highway System to Yellowknife. Three new sport fishing camps were opened, and one was closed bringing the number of tourist camps in the Territories to 13, capable of accommodating 200 people at one time. The picnic and campground development program along the Mackenzie Highway was expanded to meet the demands of increased traffic. The only tourist camp in the Arctic, an Eskimo co-operative effort at Cape Dorset, was booked to near capacity. A second successful training program was held for buffalo sport hunting guides. A preliminary survey of tourist potential was completed in the Baker Lake - Rankin Inlet - Whale Cove area. A community tourist development project was undertaken by the Yellowknife Board of Trade. The first tourist promotion film on the Northwest Territories, about sport fishing and titled "Paydirt Angling", was produced in the Great Slave Lake, Great Bear Lake, and Cambridge Bay area. The first photographic tour for travel promotion purposes was completed in the Hay River - Yellowknife - Fort Smith area.

Low-Cost Housing

Details of a low-cost housing scheme, making available first mortgage loans and a federal grant of \$1,000 per house for all residents of the Yukon and Northwest Territories who cannot afford to build to N.H.A. specifications, were worked out in co-operation with C.M.H.C. A second mortgage loan program for C.M.H.C. standard houses was also introduced into both

Territories. The low-cost Eskimo housing program continued, with over 140 houses constructed on a repayable basis at \$1,000 less than cost. A new type of prefabricated house, complete with sanitary and heating facilities, was introduced, and Eskimos in the Mackenzie Delta and Ungava Bay areas were assisted in constructing houses from local material.

Technological Development

A fish-freezing plant for sea trout fillets in the Richmond Gulf area was designed in collaboration with a commercial firm. This unit was mounted on a self-propelled barge supplied under an agreement with the Department of Transport. A 48' long liner fishing boat was purchased from the New Brunswick Fisheries Loan Board to be used in conjunction with the barge-mounted freezer. A portable sawmill was purchased and shipped to George River.

Co-operative Development

A co-operative development officer for the Mackenzie District was posted to Inuvik. Four new co-operatives were established bringing the total number of Eskimo co-operatives to 12. A co-operative was established at Yellowknife by the Miners' Union for the purpose of operating a retail store. Drafting of the Credit Union By-Laws was completed, and they were submitted to the Commissioner of the Northwest Territories.

Ungava Development

Fisheries at Port Burwell and George River produced 27,000 pounds of char which sold for \$18,000. Salmon and char fisheries at Fort Chimo produced 27,000 pounds of fish, selling for the same price. Approximately \$5,000 worth of logs and power poles were produced by a logging and sawmill operation at George River. Handicraft production in Ungava Bay rose to a gross value of \$12,000.

General Development

A sea trout fishery began in Richmond Gulf, but late delivery of equipment held down production. Damage of equipment in transit to the Mackenzie Delta delayed production on the fish reduction plant. Some 27,000 pounds of fresh and smoked fish, as well as assorted seal and whale products, were produced in the Delta. A new co-operative at Cambridge Bay shipped 14,000 pounds of char.

Plans for 1962

Area and Economic Surveys

Area economic surveys will be carried out on the west coast of Ungava Bay, the Anderson River area, the west coast of Hudson Bay, and the Fort Resolution area, where preliminary estimates indicate substantial under-utilization of resources. The Fort Resolution survey will be the first area where the people specifically requested a survey, and will be the first completely Indian region studied.

Industrial Promotion

Liaison with business groups in the Northwest Territories will be continued, and the survey of opportunities in the main settlements completed.

Market Research

New proposals will be made for marketing surplus buffalo meat. A new approach will be proposed to ensure the successful disposal of Arctic char which will be faced with substantially increased competition from new suppliers. A Canada-wide assessment will be carried out to establish select retail outlets for Eskimo handicrafts. Promotion of the Eskimo art tag will be continued to discourage the marketing of counterfeit Eskimo carvings.

Tourist Development

A fairly substantial increase in tourist traffic is indicated; mainly owing to the Mackenzie Highway. Expansion of picnic and campgrounds along the Mackenzie Highway System will continue. A new lodge will be in operation at Cambridge Bay, and a new sport fishing camp on Point Lake. There are tentative plans for two or three additional tourist camps. Small tourist projects will be sponsored by the Department of Northern Affairs and National Resources at Baker Lake, Rankin Inlet and Whale Cove. An experimental training program for sport fishing guides will be held in the Great Slave Lake area. New regulations for sport fishing will be brought into effect. Negotiations are underway for the opening of a limited sport hunting season on seal, walrus, and white whale. A preliminary assessment of tourist potential in the Mackenzie River Delta, and a detailed assessment of sport fishing potential in Baker Lake and Chesterfield Inlet will be made. A new set of tourist pamphlets will be published. The sport fishing film "Paydirt Angling" will be distributed widely throughout the United States and Canada, using 50 or more prints. A film on sea mammal hunting will be produced in the Keewatin District.

Harvesting of Natural Resources

Three Long Liner fish boats, a steel hulled cruiser type boat, and additional freezing units will be shipped to the Arctic. The total production of fish will be increased within limits established by the Fisheries Research Board. Additional use of local resources will be encouraged, and emphasis placed

on the production of food for consumption within the Arctic. An increase in the production of handicrafts and art is expected. New fisheries will be established in the Southampton Island area and on the east coast of Hudson Bay. A char fishery will be initiated at Payne Bay. Experimental work in specialty food processing will be carried out in several areas.

Housing

The progressive improvement of Eskimo housing will be continued, and additional housing provided. Territorial housing agencies will be established in the Yukon and Northwest Territories to administer the new Territorial low cost housing schemes, and appropriate legislation will be introduced in the Yukon Council to cover the programme.

Community Planning

Urban renewal will continue in Whitehorse, and further assistance given to C.M.H.C. in drawing up the Whitehorse Metropolitan Plan. Liaison will be maintained to aid in developing new towns at Pine Point and elsewhere. Aerial photography of all northern settlements will be completed and community layouts prepared for selected sites.

NORTHERN WELFARE SERVICE

Responsibilities

To provide welfare services to all residents in the Northwest Territories on behalf of the Federal and Territorial Governments and to Eskimos of northern Quebec and Churchill, Manitoba, and to advise on Yukon welfare matters as required.

Long-term Plans

The main objectives are:

- (1) to introduce in the north suitable programs of social security, public assistance, and related services for family and child welfare, especially for those classes of individuals who are in need of care and protection.
- (2) to assist in the provision of services designed to prepare people starting from primitive conditions of life for economic and social changes, to foster interim conditions of self-sufficiency pending the advent of more suitable economic conditions, and to promote attitudes of self-reliance.
- (3) to make possible the collaboration of public and private organizations, to encourage the efforts of voluntary agencies, and to foster citizen participation and initiative at the local level.

It is planned to staff each regional and area office in the north with at least one qualified welfare officer to provide both consultation and case services. In addition, medical social workers in the district offices have responsibility for providing medical social work services throughout the district and to hospital patients in the south. The Mackenzie Welfare Service is being developed to become a Territorial Welfare Service when a separate Mackenzie Territory is established.

Review of 1961 Operations

Mackenzie District

General Development - An agreement was reached with Indian Affairs Branch to include Indians where possible in the welfare program being developed in the Mackenzie. Under this arrangement, child welfare services were extended to Indians, the costs being met out of an encumbrance provided by Indian Affairs. For other services, including those provided by the Inuvik Rehabilitation Centre, Children's Receiving Homes, Transit Centres, and Homes for the Aged, Indian affairs was charged a per diem rate. Indians also participated with others in welfare projects such as the log and sawmill operation in the Delta, and the production of handicrafts.

Inuvik Rehabilitation Centre - Construction of the Centre neared completion, and the first disabled persons were admitted. The projects aspect of the rehabilitation program, started a year ago, appears to have had a significant impact on the Mackenzie Delta. During the year, 93 persons earned over \$50,000 through participation in log cutting, booming, and sawmilling, construction of log houses, fishing, food processing, chicken raising, garment manufacturing, and the operation of sales outlets. Many of these projects were organized as alternatives to direct relief payments.

Transit Centres - Transit facilities were provided again at Aklavik, Inuvik, and Cambridge Bay for persons coming from or going to hospitals.

Children's Receiving Homes - A 12-bed Children's Receiving Home was opened in Fort Smith and approval was obtained to construct a similar unit in Yellowknife.

Homes for the Aged - A home for elderly people unable to look after themselves or without relatives was operated in Aklavik.

Housing - Provision was made to house families unable to provide their own housing because of illness or other circumstances. In the Mackenzie District one to four bedroom houses are being built using local labour and materials. Altogether 25 houses have been completed or are nearing completion in the Delta.

Arctic District

General Development - The general welfare program in this District is experiencing difficulties owing to an inability to fill vacant social-worker positions. It was possible to fill only five out of the ten positions serving northern Quebec, Keewatin and Baffin Islands.

Frobisher Bay Rehabilitation Centre - During the three years this centre has been in operation 36 Eskimos have been rehabilitated. In a resident population of 73, around 10 are considered to be in need of continuing care. The program has stimulated earnings in economically-marginal outlying settlements exceeding \$250,000. The store at Frobisher, run by the Rehabilitation Centre, sold handicrafts purchased from surrounding settlements. Non-revenue producing projects, such as whale and seal hunts, were also undertaken. Encouragement was given to recreational and cultural activities in Frobisher Bay, such as radio plays.

Transit Centres - Transit facilities, operated at Fort Chimo, Frobisher Bay, and Churchill to provide temporary accommodation for discharged hospital patients returning home, handled 375 transients.

Children's Receiving Homes - The Receiving Homes at Churchill, Frobisher Bay, and Baker Lake provided temporary care for children discharged from hospital, from broken homes, or where parents were unable to care for them. They were operated by selected Eskimo couples and supervised by professional welfare staff or local administrators.

Homes for the Aged - The home at Chesterfield Inlet was operated by the R.C. Mission under agreement with the Department of Northern Affairs and National Resources. The federal home at Churchill was destroyed by fire.

Housing - Over the past three years 112 prefabricated houses were built in the Arctic District for indigent and medically disabled families.

Services and Developments Common to Both Districts

Public Assistance (Relief) - New relief policies and procedures were drafted providing better controls, clearer definitions of eligibility, and a formula for determining amounts of relief at different locations.

Child Welfare - The new Child Welfare Ordinance passed by the Territorial Council consolidates the provisions of the old Protection of Children Ordinance, Adoption Ordinance and Maintenance Ordinance, and includes several new provisions.

Medical Services - Negotiations with Indian and Northern Health Services resolved jurisdictional problems respecting acute and custodial types of care.

Family Allowances - The credit system of issuing Eskimo Family Allowances was replaced by payment by cheque, with special provisions to administer allowances for families who cannot handle this responsibility.

Linguistic Services - Several issues of the Eskimo language magazine "Inuktitut" were published (four in the Eastern dialect, and two in the Western dialect). Translation services were provided for Eskimo patients in hospital. A start was made in introducing a new Eskimo Orthography, including the development of an orthography in its final form, interpretation to all interested agencies, and tentative plans for its implementation.

Plans for 1962

General - Under the new Federal-Territorial Financial Agreement, Municipal Districts will be relieved of responsibility for providing welfare services for their residents, and welfare services will be administered by welfare offices on behalf of the Territorial Government. The Yellowknife Children's Aid Society may decide to discontinue its present responsibility for child welfare services there.

Corrections - A Corrections Officer will be appointed to make recommendations on the type of program and facilities needed to cope with increasing incidence in juvenile delinquency and some forms of adult offences.

Settlement Workers - About 12 Eskimo, Indian, and Metis Settlement Workers will be selected, trained, and employed to take responsibility for some aspects of the welfare program in small communities under the general direction of the Area Social Worker. Additional Eskimos will be trained as orthography instructors and translators, probably in Ottawa.

Relief Administration - In some communities local councils may be set up to advise on such things as eligibility for relief.

Community Assistance - A consultation service will be established to assist local communities to plan and develop needed recreational facilities of a non-commercial nature, and to provide scope generally for the exercise and development of local leadership and decision making.

Public Assistance - The new relief policies and procedures will be introduced on April 1.

Medical Services - On April 1st, Northern Health Services will become financially responsible for getting patients to hospital and for their treatment, and the Department of Northern Affairs and National Resources for any services including transportation, after acute hospital treatment is no longer indicated. Indians may be included in the new administrative arrangements, but Northern Health Services will remain financially responsible for post-hospital services for Indians.

RESOURCES DIVISION

Responsibilities

To administer Crown-owned mineral rights, forests, and lands in the Yukon and Northwest Territories.

Long-term Plans

To promote the optimum development of available resources; to develop them as rapidly as possible while protecting the public interest. Specific objectives are:

(a) to accumulate and correlate information on northern resources and to prepare a total inventory of them as a basis for promoting their development.

(b) to devise detailed policies for the disposition of oil, gas, placer and hard rock minerals, timber, and land, which will promote active development, and at the same time assure sound management of the resources and protect the public interest.

(c) to develop an administrative organization which will give efficient service to those taking part in northern resource development.

(d) to work closely with other agencies engaged in northern development to assist them in planning communities, transportation routes, and other services in relation to existing and potential resource development.

Review of 1961 Operation

Oil and Gas

Land Disposition - A total of 180 permits covering 7,549,720 acres were issued; 106 Arctic Islands permits covered 4,147,032 acres, 70 Northwest Territories mainland permits covered 3,192,282 acres, and 6 permits in the Yukon Territory covered 210,406 acres. The total acreage under permit lease and reservation on December 31, north of 60 degrees north latitude was:

Permits

N. W. T. (mainland)	1015	47,476,470	acres
Yukon	148	7,152,456	acres
Arctic Islands	968	46,778,488	acres
Water(north of 60°N)	52	2,168,814	acres

	2182	103,576,228	acres
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<u>Leases</u>	33	154,964	acres
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<u>Reservations</u>	2	5,117,644	acres
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Total	2218	108,848,836	acres
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Three Canada Oil and Gas Exploratory Permit sales were held during the year with a total of 34 permits being acquired, realizing a total cash bonus of \$829,057.

Mainland

Surface geological surveys, employing forth to fifty helicopters and fixed winged aircraft to transport twenty-five field parties, were carried out by sixteen oil companies on the mainland. Investigations extended from Inuvik south to latitude 60°O, with most of the work concentrated in the sedimentary rock outcrop belts of the Mackenzie and Richardson mountains. Over one million dollars was spent on this exploratory phase.

Light mobile geophysical equipment was introduced into the Territories in the summer. Carrying this equipment by helicopter enabled several oil operators to conduct seismic operations during the season when ground transportation was hampered by muskeg and lack of roads. Ten companies participated in some forms of geophysical work during the summer, while three resorted to stratometer surveys in the deeper rivers and lakes.

A significant gas discovery was made in the Arrowhead area of the Northwest Territories. Further drilling and seismic work was started to evaluate the Celibeta Lake structure, as the first two step-outs were dry and abandoned.

Arctic Islands

In the Arctic Islands the number of surface geological parties was three times that in 1960. Geological investigations were carried out by more than twenty parties, supplied and transported by a helicopter or a fixed winged aircraft attached to each two-man team. Stratigraphic and structural conditions were examined from Ellesmere Island, to Banks and Melville Islands. Many of the programmers were not completed owing to weather and lack of supplies.

The first well in the Canadian Arctic was started on Melville Island. A group of ten oil companies pooled acreage and finances to transport a rig and supplies by ship to the Island. Drilling began in September, and by the end of the year the well was being drilled below 10,000 feet.

There were no geophysical operations in the Arctic Islands.

Regulations

The regulations providing for the disposition of oil and gas under Canada Lands were revised, and new regulations came into effect on 6 June. These were entitled the "Canada Oil and Gas Land Regulations" and the "Canada Oil and Gas Drilling and Production Regulations". Orders providing for the disposition of oil and gas leases for Canada Lands returned to the Crown were issued by the Minister on 12 October and 1 December.

Publications

The first comprehensive "Schedule of Wells (1920-1960)" was published, listing all the wells and structure test holes drilled to the end of 1960 in the Northwest Territories and Yukon. It also describes the location, status and other

pertinent data on each hole. A report "Economics of Oil and Gas Development in Northern Canada" by G.D. Quirin was published. This discusses in detail oil and gas resources in the north and summarizes the problems of logistics and marketing of northern oil and gas.

Mining

Yukon Territory - The total value of the production of gold, silver, copper, lead, zinc, cadmium and coal is estimated at \$12,986,911 a decrease of about \$350,000 from last year. The value of gold, lead and zinc decreased, and the value of silver, cadmium and coal increased. There was substantial production of copper for the first time in many years. Silver accounted for over 50% of the value of the total mineral production. During the early part of the season, prospecting was at a low ebb, but later considerable exploration followed a spectacular discovery of silver in the southeast portion of the Whitehorse Mining District, and encouraging reports from another silver deposit in the Mayo Mining District. Underground exploration was conducted on the silver prospect at Secret Creek as well as the copper property in the Kathleen Lakes area. The large placer operator in the Dawson area accounted for most of the 67,775 ounces of gold valued at \$2,401,946 although small placer operators experienced a successful year, with an adequate supply of water. There were 2,462 mineral claims recorded and 35 quartz mining leases issued, compared with 1,337 and 87 respectively last year.

	<u>Whitehorse</u>	<u>May</u>	<u>Dawson</u>	<u>Total</u>
Claims Recorded	1642	618	202	2462

Northwest Territories - Preliminary estimates indicate a production value of \$19,992,484, a decrease of approximately 25% from last year.

The cleaning up operations at the uranium mine at Port Radium yielded pitchblende valued at \$2,782,000, a decrease of almost 5 1/2 million dollars from the previous year. The production of gold increased slightly, while silver, copper and nickel decreased. Underground development continued at the gold prospect in the Barren Lands with the shaft being deepened to 1,250 feet. The tungsten deposit in the Flat River area in the Mackenzie Mountains was further explored, resulting in a slight increase in tonnage. Surface installations were constructed and the road from the property to the Watson Lake - Ross River road was lengthened. An interesting find was made at Contwoyto Lake of what is reported to be nickel-bearing ore with a high value in gold. Although this find was not announced until the very end of the season, about 600 claims were staked. Propsecting permits granted numbered 27 and covered over 4 1/2 million acres. These permits covered areas stretching from the Yukon border to the west coast of Hudson Bay, with the majority between Kaminak and North Henik Lakes. There were 1,429 mineral claims recorded during the year and 43 quartz mining leases. On March 3 the Canada Mining Regulations were authorized by Order in Council P.C. 1961-325.

Lands and Forests

Lands - The steady annual increase in land dispositions followed the trend of the past five years. The increased interest in northern development was marked by a comparable interest in the acquisition of lands by lease and sale for residential and commercial uses. However, revenues from Crown lands remained steady. Responsibility for land dispositions was transferred to field officers under the Superintendent of Resources at Whitehorse, in order to give better service to the public, and to provide local control of land use. Considerable progress was made in a study of arable land use, particularly in the Yukon Territory. The Department of Agriculture soil survey of the Takhini and Dezadeash valleys indicated promising areas for agriculture and livestock raising. A committee from the Departments of Agriculture and of Northern Affairs and National Resources was formed to examine the broad question of the agricultural potential of Yukon Territory with a view to making recommendations for an arable land use policy. It reviewed the methods and procedures used in some of the provinces, including the form and extent of technical and financial assistance that might be offered to settlers on arable lands in the north. By arrangement with the Surveyor General, a large number of legal surveys were completed in the Yukon and Northwest Territories in both remote areas and centres of population.

Forest Management and Protection - The number of northern timber operations remained unchanged and there was no significant increase in the quantity of forest products. A very slight improvement in the lumber market in the last few months of the year did not affect operators in the Territories. The Mackenzie District experienced the worst fire season on record. The situation was very much aggravated by weather conditions that hampered radio communications. A total of 195 fires burned approximately 758,000 acres. Fire losses in the Yukon Territory were comparatively light. A total of 50 fires burned approximately 95,000 acres. A publicity programme was continued and intensified through the use of posters, circular letters, radio, and the press. Talks and lectures were given by members of the Forestry staff to inform the public on the seriousness of forest fires and to enlist their aid. Fire suppression activities were controlled from headquarters at Fort Smith and Whitehorse. Additional supplies of modern equipment were put into service and the latest techniques were tested and used to good advantage.

Land Dispositions

	<u>Land Sales</u>	<u>Agreements of Sale</u>	<u>Leases</u>	<u>Total</u>
Yukon Territory	69	146	487	702
Northwest Territories	<u>28</u>	<u>67</u>	<u>335</u>	<u>430</u>
Total	97	213	822	1132

Timber Production

	<u>Lumber</u> <u>(F. B. M.)</u>	<u>Bound Timber</u> <u>(Lin. Feet)</u>	<u>Fuel Wood</u> <u>(Cords)</u>
Yukon Territory	4,001,056	1,484,619	4246
Northwest Territories (including Wood Buffalo Park)	14,768,000	1,209,000	2921
	<hr/>	<hr/>	<hr/>
Total	18,769,056	2,693,619	7167

Revenue (to December 31, 1961)

	<u>Lands</u>	<u>Timber</u>	<u>Total</u>
Yukon Territory	\$64,239.91	\$29,612.47	\$93,852.38
Northwest Territories (including Wood Buffalo Park)	16,174.16	22,633.00	38,807.16
	<hr/>	<hr/>	<hr/>
Total	\$80,414.07	\$52,245.47	\$132,659.54

Plans for 1962Oil and Gas

Continued interest is being shown in the Liard River area and Eagle Plain Plateau by oil operators. Following gas discoveries in the Celibeta Lake and Arrowhead wells nine or ten wells will be drilled in the Liard River area. Gas discoveries in British Columbia immediately south of the border are contributing considerably to the increase in exploration in the Territories. The discovery in the Beaver River area of British Columbia, one and a half miles south of the Yukon border, is being rated as the largest potential gas well in North America and possibly in the world. If future drilling proves the magnitude of the surface structure, the total recoverable gas reserves from this field alone will equal all the present gas reserves in British Columbia. A well is proposed about fourteen miles northeast of the discovery well as approximately one-third of the structure lies in the Yukon. The first well now drilling in the Arctic Islands will be deepened and completed in 1962, and another well is being planned for the islands, possibly to be in 1963.

Two significant deep test wells will be drilled in the Yukon in 1962; one will be a deep test south of the Eagle Plain Plateau, and the second in the Beaver-crow River area. Exploratory expenditures will increase over 1961 by 20 to 25%, and seismic exploration and coverage will increase proportionately. Further surface work is planned for the Arctic Islands. A magnetometer survey may be conducted over some of the islands to locate large basement features, and to determine the gross thickness of some of the sedimentary basins.

Work will continue on both the Oil and Gas Production Act and Regulations, and the economic and evaluation studies on potential gas and oil lands administered by the department.

The second edition of the "Schedule of Wells" will be published in 1962. It will include additional information on the geology and engineering of all the wells not on the confidential list. A Statistical Report will be published including such items as annual expenditures, production, and other items pertinent to oil and gas activities in the north.

Mining

Yukon Territory - The most active exploration year for several decades is expected. There will be five underground operations, and indications are that the area to the north of Watson Lake will be the scene of a great deal of concentrated exploration.

The Prospectors' Assistance Programme, should provide an incentive for individual prospectors to get into the field. The increased price ceiling maintained by the Government will stimulate activities in the Mayo district, where favourable silver deposits occur, and the success being experienced by small placer operators should encourage an increase in this method of mining.

Northwest Territories - There are indications that prospecting and exploration activities will be widespread, not only in known mineralized areas, but also in virgin areas close to the arctic coast. The Contwoyto Lake area will be the scene of detailed exploration programmes by those companies already established, and of further staking. Permit holders indicate they will continue their programmes on most of the areas under permit.

Contracts have been secured and financing arranged to bring the Flat River area tungsten deposit into production by this fall.

Lands and Forest

Lands - The policy of decentralizing responsibility for land dispositions and management to the field will be extended to the Northwest Territories, with the centre of operations at Fort Smith, as soon as an adequate staff is organized. The Interdepartmental Committee will prepare recommendations for consideration by the Ministers of Agriculture and of Northern Affairs, and regulations for the disposition of arable lands will be drafted. These will include conditions under which settlers may be assisted both technically and financially. The annual program of miscellaneous surveys in the Yukon and Northwest Territories will be continued by arrangement with the Surveyor General.

Forest Management and Protection - Marked expansion in the number or size of timber operations in northern Canada is expected. The lumber market has shown signs of improvement, but a sharp rise in lumber prices will be needed to change the present picture. Local conditions are unpredictable and any promising mineral, oil or gas discovery could result in a rapid increase in timber requirements. An example of this is the tungsten mine on the Flat River, where a sawmill was set up to produce 1.5 million f.b.m. annually.

The investigations started in 1961 on an improved system of radio communications will be pursued with the co-operation of the National Research Council. The aim is to determine the best type of communication system to serve both the pressing demand of forest protection and fire suppression, and the need for day to day administrative communications in the field. Improved techniques to prevent and control forest fires will be developed. Publicity will be intensified and extended throughout the north. A method of providing general data on the forest resources inventory is to be studied. The purpose is to provide convenient reference maps illustrating the general location of timber stands to meet the needs of unforeseen developments. As soon as a particular locality demands attention, detailed inventories of local timber will be made.

NORTHERN CO-ORDINATION AND RESEARCH CENTRE

Responsibilities

To sponsor and conduct research on northern subjects, to encourage northern research by non-government agencies, to co-ordinate departmental and inter-departmental research, and to collect and disseminate technical and scientific information on the north.

Long-term Plans

To assist in the development of the Canadian north by fostering knowledge of northern subjects through scientific and technical investigations.

To provide laboratory and other facilities in the north for the use of scientists from government departments, universities and elsewhere.

To administer a program of grants to northern research institutes and northern scientific expeditions.

Review of 1961 Operations

Northern Affairs Library

The Northern Affairs Library, which is part of the Centre, added over 400 books and periodicals dealing with northern subjects. Over 4,000 books were loaned and over 900 enquiries received.

Scientific Research Station at Inuvik

Based on information supplied by a number of government departments which will be using the station, a plan for a scientific research station at Inuvik was drawn up and approved by the Scientific Research Sub-Committee of the Advisory Committee on Northern Development. The plan calls for a station 8,000 square feet in size, located in the serviced area of the townsite.

It will include:

- (a) general laboratories with water, gas, special electrical outlets and ventilating equipment;
- (b) Frozen storage space for specimens;
- (c) general workshop, photographic and dark rooms;
- (d) offices for the permanent research personnel, supporting staff and for visiting scientists;
- (e) a combined library and seminar room;
- (f) a fish and animal specimen room.

Research Program

Eleven research projects were carried out, employing 13 scientists. Nine of the projects were in the field of social anthropology, and two dealt with special problems in the fields of transportation and climatology.

Scientists were employed under contract, through grants-in-aid, and as seasonal employees from the universities of Toronto, McMaster, McGill, Montreal, British Columbia, and the Sorbonne in France.

The projects in social anthropology were mainly concerned with the extent to which the Eskimos, Indians and Metis were making effective adjustment to changed social and economic circumstances. The projects were as follows:

- (1) A social and economic survey of the Metis and Indian population at Old Crow, Yukon Territory;
- (2) A study of the use of alcoholic beverages by Eskimo, Metis, and Indian groups living in the Inuvik and Aklavik areas;
- (3) A social and economic study of the Wakeham Bay Eskimo;
- (4) The amount and source of income and types of expenditures of the Resolute Bay Eskimos was studied, and the economy investigated to see if the area could be self-sufficient based on local resources.
- (5) A sociological survey of settlement patterns was conducted in the Mackenzie District and Eastern Arctic;
- (6) The examination of Eskimo administration in Alaska, Canada, and Greenland continued and was extended to include Labrador;
- (7) An investigation of socio-economic conditions of the Eskimo people in the Igloodik and Thom Bay regions was carried out.
- (8) A social and economic study of the Baker Lake Eskimos was continued;
- (9) A social and economic study of the living conditions and welfare problems of Indian and Metis groups living in the Fort Good Hope and Snowdrift areas was carried out.

The other two projects were:

- (1) A continuation of a study into the proposal advanced by some Russian scientists to modify the Arctic climate by constructing a dam across the Bering Strait;
- (2) An assessment of factors effecting landing operations from ships at Winter Harbour, Bridport Inlet and Skene Bay.

Plans for 1962

The Research Station at Inuvik will be built, and preparations made for receiving scientists in the summer of 1963.

One officer will handle enquiries for technical information on the North, and the Russian holdings in the Library will be substantially increased. A programme of grants to northern institutes, universities engaged in northern research and expeditions will be initiated. These grants will not be for specific disciplines, but can be used as the institute, university or expedition sees fit.

The following additional projects will be undertaken, provided suitable scientists are available:

- (1) An investigation of the possibility of devising suitable psychological tests to measure aptitude, intelligence, and basic educational achievement in Eskimo, Indians and Metis School children in the northwest territories.
- (2) A comparative study of Eskimo, Indian and Metis school children in the day and residential school settings.
- (3) Studies of the social and economic implications for the Eskimos of co-operative and resource development projects. The studies will be carried out at -
 - (a) Port Burwell and George River;
 - (b) Cape Dorset and Povungnituk.
- (4) A study of Eskimo kinship and adoption problems in four northern communities.
- (5) A continuation over a 12-month period of the social and economic studies of the Eskimo communities of Baker Lake, Rankin Inlet, and Whale Cove.
- (6) A social anthropological study of the living conditions and welfare problems of Metis and Indian trapping groups in the Fort Norman and Fort Franklin areas.
- (7) A sociological study of modern frontier communities such as Yellowknife and Whitehorse.
- (8) An analysis of population and other statistical data from departmental records to determine Indian and Eskimo population growth rates, number of Eskimos and Indians working in wage employment, average yearly family income, relief costs, cost of living in northern settlements, and other factors.

THE NORTHERN CANADA POWER COMMISSION

Responsibilities

To construct and operate power plants in the Northwest Territories and Yukon to supply industrial, commercial, and domestic consumers as authorized by the Governor-in-Council. The plants are self-sustaining, and the power rates provide sufficient revenue to repay capital expenditures over a period of years.

Long-term Plans

To construct a central power and heating plant to supply the new Frobisher Bay townsite and environs.

Review of 1961 Operations

Northwest Territories

Inuvik - The Inuvik powerhouse equipment consisted of 1860 KW of diesel-electric and 600 KW of steam turbine generating equipment along with 3 - 30,000 lb/hr/ Steam boilers. At year-end there were 420 electrical power connections and 107 connections to the central heating water and sewage systems. Maintenance of mechanical and electrical installations in the various government buildings continued. The plant had a permanent staff of 28 and gross revenue was approximately \$690,000.

Fort McPherson - On behalf of the Department of Northern Affairs and National Resources the Commission operated the power plant, heating system, and water and sewage service associated with the school and hostel at Fort McPherson; power was also supplied on a commercial basis to several other government establishments and 14 private consumers. The permanent operating staff consisted of 3 men; all costs were recoverable from the Department of Northern Affairs and National Resources, after crediting billings to other departments and private consumers.

Fort Simpson - The capacity of this plant was 550KW. Increasing demand for power resulting from the connection of the Department of Transport Airport and equipment in the airport area, as well as greater demand within the Fort Simpson community itself led to plans to add a 600 KW unit during 1962. The Commission continued to operate and maintain the central heating plant associated with the new school and hostels, and the water and sewerage system supplying the community on behalf of the Department of Northern Affairs and National Resources. All costs in connection with these operations were recoverable from the Department of Northern Affairs and National Resources after crediting billings to other departments and private consumers. The power plant had a staff of 5 full-time employees and an average of about 10 employees were engaged in the central heating plant and water and sewerage systems. Gross revenue for the year from the sale of electric power was approximately \$140,000.

Fort Smith - The plant capacity remained at 1900 KW, supplying approximately 480 domestic and commercial consumers. The plant had a staff of 12 and gross revenue for the year was approximately \$205,000.

Frobisher Bay - The Commission continued to lease the 1000 KW generating plant and distribution system from the Department of Transport, and operated the two 1000 KW Commission owned diesel-electric units, providing a total capacity of 3000 KW. Preliminary investigation and planning began on the power and heating plant to supply the new Frobisher Bay townsite. The plant had an operating staff of 10 and gross revenue for the year was approximately \$425,000.

Fort Resolution - This 325 KW plant began operation in February and at year-end 35 customers were being served. The staff consisted of 3 permanent employees and gross revenue for the year was approximately \$32,000.

Snare River - Snare Rapids - Two hydro-electric plants of 8350 HP and 9700 HP, located 90 miles northwest of Yellowknife and commissioned in 1948 and 1960 respectively supplied the Yellowknife area. Four mines received power directly from the plant and a private utility company purchased power for resale to domestic and commercial users in Yellowknife. The plant had 14 employees and a gross revenue of approximately \$750,000.

Yukon Territory

Mayo - A 6000 H.P. hydro plant supplied the mining industry in the Galena and Keno Hill areas and the communities of Mayo and Keno City. The plant had 8 employees and a gross annual revenue of approximately \$475,000.

Whitehorse - A 15,000 HP hydro-electric plant, on the Yukon River about two miles upstream from the city, supplied the entire power requirements of the Department of National Defence and a substantial part of the needs of the city of Whitehorse, supplementing the Yukon Hydro Company's own hydro sources. Power for generation of steam in electric boilers for heating purposes was supplied to the Department of National Health and Welfare hospital and the Protestant and Roman Catholic hostels; this power was supplied at rates designed to be competitive with cost of oil heating and the resulting revenue had a favourable influence on the rate for power supplied directly to the Department of National Defence and for distribution by the Yukon Electrical Company within the City of Whitehorse. The plant had a full-time staff of 7 and a gross annual revenue of approximately \$590,000.

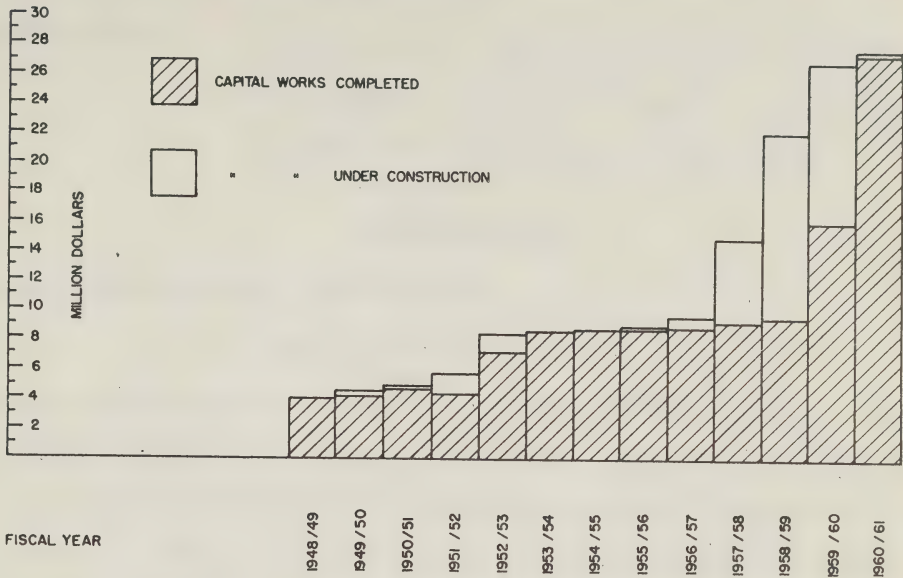
Plans for 1962

The following projects will be undertaken:

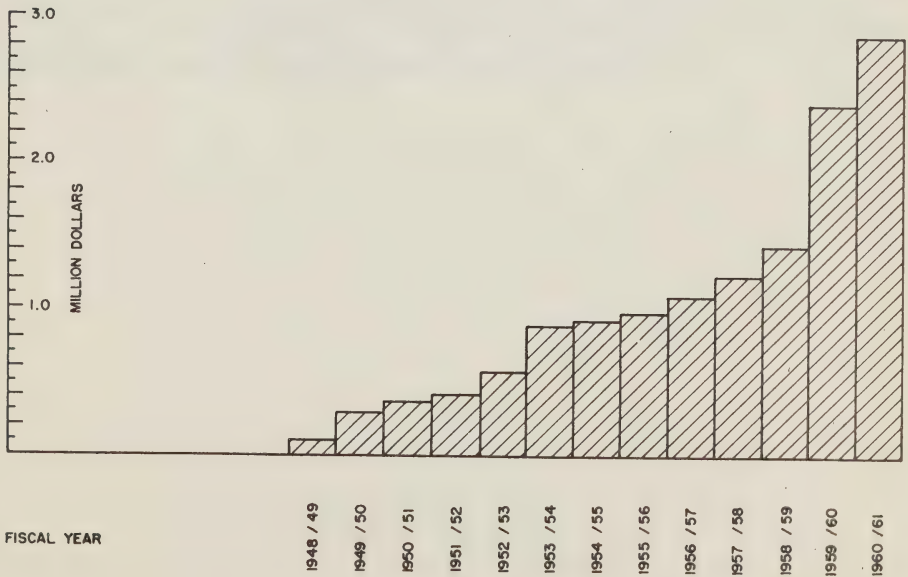
- (a) General maintenance of transmission lines and plants, and extension of distribution systems as required to service new constructions;
- (b) Continued investigation into the heat & power requirements of the permanent Frobisher Bay townsite as well as surrounding area including design, material procurement, and a beginning on plant construction.

- (c) Installation of additional generating capacity at Fort Simpson;
- (d) Installation of additional generating capacity at Fort Smith;
- (e) Extension of the utilidor system at Inuvik to serve the new housing area.

CAPITAL INVESTED



GROSS INCOME



NORTHERN TRANSPORTATION COMPANY LIMITED

Responsibilities

To act as a common carrier of freight on the Mackenzie River system including Lake Athabasca, and Great Slave and Great Bear Lakes, under the jurisdiction of the Board of Transport Commissioners. To distribute freight by sea ex Tuktoyaktuk to DEW Line stations in the Western Canadian arctic.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

Tonnage handled was down about 9% from 1960. Tonnage carried on the Mackenzie River system was 128,234 tons. Of this, 60,035 tons was moved in to Northern Alberta and Saskatchewan from Waterways, 15,411 tons moved from Alberta in to the Northwest Territories, 12,015 tons was southbound to Waterways, and the balance represented movements within the Northwest Territories, Alberta, and Saskatchewan. Along the Arctic coast, deliveries were made of general cargo and petroleum products to DEW Line stations.

Plans for 1962

Capital expenditures are estimated at \$82,000. No additional points will be serviced and the run from Fort Franklin to Port Radium will not operate owing to the closing of the uranium mine at Port Radium.

PCST OFFICE DEPARTMENT

Responsibilities

Provision of postal services commensurate with the development of northern Canada.

Long-term Plans

Normal planning to meet requirements.

Review of 1961 Operations

Postal activities were carried out in the Yukon Territory and the Districts of Mackenzie under the established procedure of decentralizing to districts. For the districts of Frankling and Keewatin the control of postal operations continued to be centralized in Ottawa. Two post offices were closed, Upper Liard and Port Radium, leaving sixty post offices in operation in the Yukon and Northwest Territories. During the year 60,445 pounds of mail were dispatched the 13 post offices and 9 non-post offices in the Canadian north via government and private ships, R.C.A.F., R.C.M.P., courtesy flights and regular air stage flights. The Christmas air drop was provided by the R.C.A.F., and 8,109 pounds dropped by parachute to 16 settlements.

The cost of conveying mail by air to and from post offices in the Yukon and Northwest Territories:

Northwest Territories

	Inuvik - Tuktoyaktuk	788.00
	Churchill - Baker Lake	27,445.39
	Churchill - Coral Harbour	4,493.52
	Fort Nelson - Fort Liard	936.00
*	Mackenzie River area	455,518.84
	Yellowknife - Discovery	1,314.65
	Aklavik - Inuvik	162.31
	Montreal - Frobisher Bay	<u>92,230.86</u>
	Total 1960/61	586,889.57
	Comparative total 1959/60	457,068.71

Yukon Territory

	Dawson - Old Crow	5,245.20
	Dawson - Stewart River	2,070.00
*	Vancouver - Whitehorse	417,757.75
	Whitehorse - Dawson	<u>32,633.89</u>
	Total 1960/61	457,706.84
	Comparative total 1959/60	254,117.52

* The Mackenzie River area route shown under Northwest Territories, also services three northern Alberta offices and two northern Saskatchewan office; the cost of this is included in the total of 455,518.84.

* The Vancouver-Whitehorse service shown under Yukon Territory, also carries mail to and from three landing points in northern B.C., the cost of this is included in the total of 417,757.75.

Salary expenditures at post offices paid from post office revenue for the fiscal year 1960-61 were:

Northwest Territories

Accounting	-	\$40,064.50
Non-accounting	-	5,922.33

Yukon

Accounting	-	\$33,794.90
Non-accounting	-	4,098.46.

Plans for 1962

To maintain adequate service requirements.

DEPARTMENT OF PUBLIC WORKS

Responsibilities

Planning and construction of highways and bridges. Maintenance and improvements to river routes and provision of wharves and harbour facilities. Planning and erection of buildings both for public use and for the requirements of government departments. Installation, extension, and improvement of sewer, water, and power services in northern settlements. Provision of architectural and engineering services to all government departments, as required. Acquisition, management and control of government property including federal buildings and housing projects in the larger settlements.

Long-term Plans

To act as architectural and engineering consultants and construction agent for the government in the effective development of northern Canada. To assist in the planning and construction of properly developed centres from which the administration and exploitation of the North can be assisted and controlled. These centres are Whitehorse, Inuvik, Yellowknife, Fort Smith, Frobisher Bay and, in conjunction with the Province of Manitoba, Churchill. To continue the construction of "year round" highways northward into the Yukon and Northwest Territories. To continue the work of maintaining and improving the navigable waterways. To establish a standard of housing accommodation for federal employees in northern communities.

Review of 1961 Operations

Planning and construction work was undertaken for twelve departments of the federal government. Over 100 construction projects of varying sizes were started: about 80, including some carried over from 1960, were completed. Most of the remaining projects have been closed down for the winter and will be completed during 1962. In some cases, bad weather contributed to the late delivery of building materials, and as a result no work could be done. These projects will be started as soon as the 1962 building season opens.

Among the projects still under construction at the end of the year were general development programs at Fort Simpson, Pangnirtung, Eskimo Point, Snag Creek, and elsewhere, as well as R.C.M.P. quarters at several settlements in the Mackenzie District.

The major development program at Inuvik was completed and maintenance of the area was handed over to the Department of Northern Affairs and National Resources. Some of the other completed projects included a new water system at Fort George, the oil distribution systems at Chestfield Inlet and Coppermine, the electrical distributions system at Pangnirtung, the post office at Moose Factory, the federal building at Dawson, and the nursing stations at Fort Chimo, Habay, and Old Crow.

A limited development at Frobisher Bay was approved by the Cabinet. Subsoil investigations and surveys were completed and enabled a group of Consulting Architects and Engineers employed by the Department to begin the preparation of plans and specifications for the new town.

One important development was the seismology program for the Department of Mines and Technical Surveys. Seismograph vaults at Alert, Mould Bay, and Schefferville were completed. Several sites were surveyed and assessed, and three further units studied.

In the Northwest Territories surveys for the Hay River - Pine Point - Fort Smith road were started and a few bridge sites were examined. The Mackenzie River ferry began to operate providing the final link in the Great Slave Highway between Enterprise and Yellowknife. Construction to extend this highway eastward from Yellowknife was started. Reconstruction of the Mackenzie Highway from Hay River to the Alberta border was well advanced.

In the Yukon Territory an aerial survey was carried out between Ross River and Carmacks. Construction of both the Flat Creek - Eagle Plains and the Watson Lake - Ross River roads was continued and work started on the Nahanni Range Road. The McQuesten River bridge, and the Ogilvie Bridge over the Klondike River were substantially completed. The usual program of maintenance and improvements to river routes was continued. Major repairs were carried out on the wharves at Fort Resolution and Fort Chipewyan. A contract was let to build floating wharves at Fort Good Hope and Fort Norman and floating gangplanks at Arctic Red River, Reindeer Station, and Wrigley Airport. The contractor manufacturing the floats will deliver them early in 1962. A wharf was built at Fort Providence and a landing stage at Fond du Lac. Various potential sites were investigated to develop a shipping terminal at Hay River.

Existing housing in the north had been studied in 1960. As a result, a uniform standard of accommodation was adopted in 1961 to provide equal amenities for the employees of all government departments.

Plans for 1962

The general construction plans of government departments indicate that activity in the north will continue at much the same level as in 1961. An increasing amount of work will be awarded to general contractors by public tender calls.

Tenders will be called early in the year to build an addition to the dormitory building at the Yellowknife school, and an 8-classroom addition to the school at Fort Smith. Tenders will be called for a hostel and school addition at Fort George, a laundry at the Moose Factory hospital, and a Federal Building at Hay River. Two new prisons are being designed for the Whitehorse and Yellowknife areas.

The proposed development at Frobisher Bay will be one of the most challenging projects. The site will be cleared and a start made on building the roads, municipal services, hospital and some warehousing. Plans for the entire project will be completed and tenders will be called early in 1963 for the remainder of the construction. It is anticipated that all buildings will be ready for occupancy by the end of 1965. The housing planned for the new town will consist entirely of self-contained apartment units, instead of the usual single and double housing units.

The material gathered during the site investigations for the proposed shipping terminal at Hay River will be assessed and evaluated. The Cambridge Bay wharf will undergo major repairs, and a new wharf will be built at Norman Wells.

The seismology program for the Department of Mines and Technical Surveys will be continued, and four more vaults will be constructed.

ROYAL CANADIAN MOUNTED POLICE

Responsibilities

The Royal Canadian Mounted Police is the only law enforcement agency in the Yukon and Northwest Territories, and has sole responsibility for enforcing federal statutes, territorial ordinances, and the criminal code. In addition, the municipalities of Yellowknife, Hay River, Whitehorse, and Dawson are policed by members of the Force. As well as this basic responsibility for law enforcement, many other functions are performed on behalf of other Federal Government agencies.

Long-term Plans

In recent years much of the work performed for other government departments has been eliminated with the stationing of employees of these departments in the north. At the same time there is a marked movement of Eskimos from the land into the settlements. This is changing the character of police work. Extensive patrols by dog-team to visit Eskimo camps are becoming less important. In many cases however natives who have given up living off the land tend to loiter around the settlements. This is unfortunately resulting in an increase in the incidence of drunkenness and crime.

Review of 1961 Operations

The following distances were covered by Patrols:

By dog team.....	44,387 miles
By boat.....	70,209 miles
By foot patrols.....	26,649 miles.

An additional 1,000,000 miles were covered by aircraft, railway, automobile, truck or snowmobile.

The number of cases handled increased, but there was a slight decrease in other duties. Approximately 6,000 case files were opened, an increase of 1,000 over 1960, and 40,000 other duties were performed, a decrease of 3,000 largely the result of transferring the issue of family allowances to the Department of Northern Affairs and National Resources. The number of prosecutions continued to increase, a total of 4,321 cases being taken before the courts compared to 3,000 in 1960. Two murders were investigated, and are still before the courts. Liquor was probably the biggest contributor to people running afoul of the law. The number of liquor prosecutions was 1,211 from the white population, 940 from the Indians, and 240 from the Eskimos, making a total of 2,391 liquor prosecutions in a population of approximately 36,000.

Territorial goals were operated in inadequate and unsuitable quarters adjoining R.C.M. Police offices. The total number of prisoners and prisoner man-days by sub-division were:

	<u>Prisoners</u>	<u>Prisoner Man Days</u>
Yukon	1641	9498
Fort Smith	737	7686
Western Arctic	281	4271
Eastern Arctic	105	561
Central Arctic	13	75
	<hr/>	<hr/>
Total	2777.	22,091
	<hr/>	<hr/>

Members continued to render medical assistance and first aid at many places, and were frequently called upon to fill in until a doctor or trained nurse arrived. There were no serious outbreaks of disease in the isolated parts of the north. Members assisted in the Indians and Northern Health Services on their semi-annual medical patrols. Two children were attacked by dogs, resulting in one death and one serious injury. In 1960 there were six cases resulting in two deaths. The Department of Northern Affairs and National Resources co-operated in the continual problem of enforcing the Dog Ordinance by appointing more Dog Officers throughout the north. Rabies, transmitted to the dogs by wild animals, did not reach serious proportions although a number of cases were reported. Vaccination against rabies of all dogs in the north was actively encouraged with promising results, though some difficulty was encountered in convincing natives of the need. The introduction of pure bred Siberian Huskies for R.C.M. Police dogteams was continued, and this type of dog promises to be most satisfactory.

The agreement between the R.C.M. Police and the Department of Northern Affairs and National Resources for sharing the expenses of three aircraft was terminated. One aircraft from Churchill was transferred to Inuvik. The stationing of an aircraft at Whitehorse was delayed owing to an accident. The use of the aircraft for police purposes only resulted in much better supervision and control, and extended patrols by air were undertaken.

A sub-divisional headquarters was established at Frobisher Bay, allowing frequent patrols to isolated detachments in the Eastern Arctic. The detachment at Cape Parry was closed, and its responsibilities for patrolling the DEW Line sites were transferred to the Tuktoyaktuk detachment.

Plans for 1962

A new sub-division headquarters will be established at Baker Lake. This Central Arctic Sub-Division will include the detachments at Baker Lake, Cambridge Bay, Chesterfield Inlet, Eskimo Point, Rankin Inlet, and Spence Bay

Tenders will be called for the construction of gaols at Whitehorse and Yellowknife

Preparations are being made to station an additional 25 men at Dawson for six weeks during July and August in connection with the Dawson City Gold Rush Festival.

Close liaison will be maintained with the Departments of Justice and Northern Affairs and National Resources in planning methods for handling the growing incidence of juvenile delinquency, and a Juvenile Court Judge will be appointed for the Eastern Arctic.

Radio facilities will be improved to enable detachments to communicate with each other, and with their sub-division headquarters.

DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

Responsibilities

Operation and management of departmental airports, and supervision of several airports operated by other agencies.

Long-term Plans

To anticipate as far as possible the future needs of civil aviation in the north.

Review of 1961 Operations

Frobisher Airport

The U.S.A.F. returned to Frobisher Bay in August, 1960, upon completion of runway and housing facilities. Some problems regarding water loss from the dam storage-reservoir and heating deficiencies were encountered during the following winter. These problems were overcome.

In November, the major operations at the Baffin Island Air Station were concluded and the facilities were taken over by Strategic Air Command, U.S.A.F., from Air Defence Command, U.S.A.F. through the Department of National Defence and the R.C.A.F. They are now operated by the Department of Transport to accommodate some 150 contractor maintenance personnel. The better accommodation has been an important factor in reducing the turnover of personnel from 104% for the first year to less than 40%.

Sewage collection tanks, sewerage mains, and flush toilets were installed during the summer in the married quarters and single staff house built by the Department.

Cambridge Bay, N.W.T.

Under a memorandum of understanding between the Departments of Transport and of Northern Affairs and National Resources for the joint operation of Cambridge Bay, aerodrome operations, electric power, and road maintenance were provided. Some accommodation problems arose because the Department of Northern Affairs and National Resources had not erected transient quarters.

General

General improvements were made to the aerodromes at Inuvik, Fort Simpson, Yellowknife, and Norman Wells, including new terminal buildings, aerodrome lighting, and runway work. No additional aerodromes were taken over.

Plans for 1962

Studies of civilian requirements for further flying in the north will be continued.

CONSTRUCTION BRANCH

Responsibilities

Construction for the Air Services of the Department of Transport.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

Airport development and lighting projects were carried out at Frobisher, Sach's Harbour, Cambridge Bay, Fort Resolution, Fort Simpson, Inuvik, and Norman Wells in the Northwest Territories; at Watson Lake in the Yukon; at Fort Nelson, and Fort St. John in British Columbia; at Peace River, Alberta; and at Goose Bay and Cartwright in Labrador.

Buildings and other miscellaneous projects were undertaken at Clyde River, Frobisher, Baker Lake, Sach's Harbour, Chesterfield Inlet, Coral Harbour, Eskimo Point, Mould Bay, Rankin Inlet, Resolute, Cambridge Bay, Contwoyto Lake, Coppermine, Fort Simpson, Fort Smith, Hay River, Inuvik, Norman Wells, Wrigley, and Yellowknife in the Northwest Territories; at Aishihik and Whitehorse in the Yukon; at Great Whale River, P.Q.; at Churchill, Man.; at Fort McMurray, and Fort Vermilion in Alberta; at Alert Bay, B.C.; and at Battle Harbour, Cartwright, and Goose Bay in Labrador.

Plans for 1962

Airport development and lighting will be carried out at Cambridge Bay, Chesterfield Inlet, Frobisher, Hay River, Inuvik, Norman Wells, Rankin Inlet, Resolution Island, and Sach's Harbour in the Northwest Territories; at Watson Lake and Whitehorse in the Yukon; at Fort Chimo, P.Q.; at Fort Nelson and Fort St. John in British Columbia; at Lynn Lake, Man.; and at Goose Bay in Labrador.

Buildings and other miscellaneous projects will be carried out at Alert, Baker Lake, Cambridge Bay, Coppermine, Eskimo Point, Fort Good Hope, Fort Reliance, Fort Simpson, Fort Smith, Frobisher, Hay River, Inuvik, Norman Wells, Rankin Inlet, Resolution Island, Sach's Harbour, and Yellowknife in the Northwest Territories; at Dawson City, Watson Lake, and Whitehorse in the Yukon; at Brochet, Man.; at Fort Chimo and Great Whale River in Quebec; at Fort St. John, B.C.; at Fort McMurray and Grande Prairie in Alberta; and at Cartwright, Goose Bay, and Battle Harbour in Labrador.

METEOROLOGICAL BRANCH

Responsibilities

Provision of adequate meteorological facilities in the north. This involves the operation of surface and upper air stations, obtaining meteorological reports from ships in northern waters, and the operation of forecast offices. Ice reconnaissance and ice forecasting over ice-infested navigable waters in the north. In addition to 13 upper air stations in the north, the Meteorological Branch share jointly with the United States Weather Bureau responsibility for operation of the Arctic Meteorological Observatories at Resolute, Alert, Eureka, Isachsen and Mould Bay, N.W.T. and for the development and maintenance of the supporting airstrips at the latter four of these stations.

Long-term Plans

To provide more complete meteorological and related scientific information in the north, necessitating an expanded network of surface weather observing stations and improved equipment for upper air observations to higher levels; to provide more married living accommodations at several locations in order to encourage more experienced personnel to serve at these stations; to operate seismic vaults for the Department of Mines and Technical Surveys at a few locations, and to undertake a program of ozone, water vapour, and radiation observations to high levels in the atmosphere at certain stations.

Review of 1961 Operations

Thirteen upper air stations were operated in the north in addition to five stations operated jointly with the U.S. Weather Bureau. Surface synoptic and/or aviation weather reports were taken, recorded, and transmitted from 58 stations north of latitude 60°N, including an automatic weather station at Sherwood Head and 16 stations along the DEW Line. At Cape Parry, Cambridge Bay, Hall Beach, and Cape Dyer meteorological technicians were assigned to provide a more complete meteorological observing program. Three meteorological inspectors were assigned for duties along the DEW Line. At other stations meteorological inspections were carried out by regional meteorological inspectors. All the upper air stations maintained their full program of two rawinsonde ascents per day, sending instruments to heights averaging over 80,000 ft. to measure and transmit temperature, pressure, and relative humidity data through the ascents, and by tracking to determine the upper winds at various levels. At the Joint Arctic Weather Stations the daily programme also included two pilot balloon observations, as well as measurements of sea ice thickness, snow profiles and tides. At Churchill support of the U.S.A.F. in providing larger balloons, helium gas, and airborne instruments was discontinued, but the more up-to-date rawinsonde ground equipment enabled upper winds to be obtained to higher levels than at the other upper air stations. Routine forecasts for the Arctic were supplemented for special Arctic operations. Ice reconnaissance, using chartered aircraft, was carried out from five field ice reconnaissance units during the shipping season as follows:

<u>Base</u>	<u>Area</u>	<u>Period</u>	<u>No. of Flights</u>	<u>No. of Flying hrs.</u>
Churchill	Hudson Bay James Bay	June 21st- Nov. 8	22	266
Frobisher Bay	Hudson Strait Foxe Basin Davis Strait	July 2nd- Nov 11	48	411
Cambridge Bay and Cape Parry	Western Arctic	June 25- Nov. 10	56	368
Resolute	Queen Elizabeth Island, northern Baffin Bay	July 28- Sept. 13	22	152
Fort Smith	Lake Athabasca Great Slave Lake	April 30 June 19	10	30

Two chartered long-range ice reconnaissance missions totalling 105 hours were completed in the latter part of April and May, to obtain break-up data in arctic shipping lanes south of latitude 75° north. Through the co-operation of the R. C. A. F. ice observers accompanied flights on routine operations totalling 640 hours. Eighty-seven short range helicopter ice reconnaissance flights were completed from icebreakers totalling 74 hours. In all over 2,000 hours were flown. Shipboard ice observers were assigned to eight departmental icebreakers for a total of 681 days and completed 2730 regular meteorological and ice observations between mid-June and early November. Regular weekly ice thickness measurements were received from 31 northern stations. Daily shore station ice reports from 25 stations supplemented the aerial and shipboard ice reconnaissance.

The Ice Central, located in Halifax, issued season outlooks, thirty-day forecasts, and five-day forecasts. A field ice forecast office operated at Frobisher from mid-July to early October, and provided short-range forecasts and advice for the Hudson Bay route, Foxe Basin, and the Eastern Arctic. A similar office operated at Cambridge Bay, and for a short period from Resolute, from mid-July until late September to cover the coastal areas of the Central and Western Arctic.

At Resolute temperatures were recorded in permafrost to a depth of 650 feet, and ozone and radiation measurements were made. At Resolute, Alert and Mould Bay strontium 90 fall out was measured and auroral observations made.

An accelerated airstrip improvement program was continued at Alert, Eureka, Isachsen, and Mould Bay. The Alert strip is now kept open throughout the year, and the remaining strips have been developed sufficiently to allow their use during most of the summer. All strips can be opened during the winter

months when necessary. Improved upper air equipment was installed at Eureka, Isachsen, and Resolute. Seismic vaults and magnetic observatories were constructed at Alert and Mould Bay, and the seismic and magnetic observational programs began in September. Plans for the rehabilitation of Alert were complete, and supplies and materials sent there for use in 1962. An automatic isotope-powered weather station was installed at Sherwood Head, Axel Heiberg Island and began operation on August 17, transmitting barometric pressure, temperature, wind direction, and speed every three hours to Resolute where the message is copied by an automatic receiver. The data are included with other weather reports for transmission by teletype circuits.

Plans for 1962

Fibreglass domes will be forwarded to all the upper air stations preparatory to the installation of the new type of radiotheodolite operating on a frequency of 1680 megacycles. GMD radiotheodolites will be bought for such stations as Hall Beach and Inuvik so that they can begin a special observing program for the International Quiet Sun Year. Considerable station improvements will include a sewage disposal system at Baker Lake, additional buildings at Sachs Harbour, and dwellings at several stations. The ice reconnaissance program will be continued and modified as required to fulfill new commitments or to increase efficiency. The cost of modifications to ice reconnaissance aircraft to improve navigational and observing facilities by radio altimeters and air-borne radar is being investigated.

Construction plans include rebuilding at Alert; installation of pipe lines; pumps and storage tanks for bulk fuel oil at Alert, Eureka, Isachsen, and Mould Bay; completion of plans for rebuilding Eureka and relocating the upper air installation at Resolute; survey of Isachsen and Mould Bay for relocating the upper air installations; extension of the airstrips at the satellite stations to 200 ft x 6000 ft to meet RCAF requirements.

TELECOMMUNICATIONS BRANCH

Responsibilities

To provide radio aids to air and marine navigation; to provide radio facilities for various scientific organizations and for meteorological observations; to provide other telecommunication facilities as required; to foster and promote the development of public telecommunication services.

Long-term Plans

Normal planning to meet responsibilities.

Review of 1961 Operations

Baker Lake - The access road and building foundation for the new remote combined non-directional beacon/transmitter building were completed.

Banks Island - The development of a remote transmitter building at Sachs Harbour was 75% completed.

Cambridge Bay - The new 25 watt beacon installation was completed. The new high power non-directional beacon for the transmitter site was not installed owing to delay in shipping. The automatic error correction multiplex system for the circuit between Cambridge Bay and Resolute Bay was completed. Additional air-ground radio communication frequencies were commissioned.

Chesterfield Inlet - The non-directional beacon-transmitter building was expanded in preparation for the installation of equipment for circuit 826 from Chesterfield Inlet to Churchill.

Coppermine - Work continued on improving the water supply, including installation of a 10,000 gallon storage tank.

Dawson City - The new building for the non-directional beacon was completed, but the new beacon equipment was not installed owing to a delay in shipment. The number of air-ground radio communication frequencies was increased.

Eskimo Point - The site for a non-directional beacon was selected and the building prefabricated in Winnipeg and shipped to Eskimo Point. Completion was delayed as some material was not delivered.

Fort Good Hope - The site was selected for a high powered non-directional beacon to replace the R.C.C.S. beacon.

Fort Resolution - A combined non-directional beacon-transmitter building was 50% completed and will be finished early in 1962. Additional air-ground radio communication frequencies were added.

Fort Smith - Rehabilitation of the non-directional beacon building was completed. A new high power non-directional beacon was purchased to replace the obsolete beacon.

Frobisher - The construction of a new remote receiver site was delayed pending a decision on the use of a former USAF receiving site rather than the site planned near Apex Hill. Installation of the automatic error correction-multiplex system awaits the construction of the receiver site. Plot plans have been completed for a permanent ILS system. Facilities were commissioned for direction radio-telephone connection between ships and points served by commercial telephone companies.

Hay River - The non-directional building and operational building planned for construction were deferred as a new airport site may be developed. The non-directional beacon was installed in the transmitter building.

Inuvik - A new high power beacon was installed and additional air-ground communications facilities commissioned. Radio communications services to privately operated out-stations were improved and expanded.

Mayo - A non-directional beacon installation to replace the existing R. C. C. S. facility was completed, except for the installation of the transmitters which were delayed in shipment.

Norman Wells - A new remote receiver site was surveyed and selected.

Nottingham Island - Most of the new marine beacon, replacing the old direction finder equipment, was erected. The remainder of the equipment was not available for shipment.

Port Radium - This former R. C. C. S. Station was closed owing to decreased activity.

Rankin Inlet - The building was completed for a high powered non-directional beacon to serve as an enroute aid.

Resolute - Building was 50% complete at the new remote receiver site. Radio communications services to privately operated out-stations were improved and expanded. A new laboratory building and a new building for a dining room, recreation room and kitchen were constructed at the Ionosphere Station.

Resolution Island - Owing to a change in the U. S. A. F. operation at Cape Warwick, negotiations were begun with the U. S. A. F. to relocate D. O. T. facilities there, and work planned for the improvement of the present station was cancelled.

Thompson, Man. - An aeronautical beacon was commissioned.

Yellowknife - A high power radiobeacon with voice was commissioned to replace the LF radio range destroyed by fire.

General

Changes in point-to-point circuitry greatly improved communications. Error correcting equipment was added to the radioteletype circuit Resolute-Cambridge Bay and separate channels provided for air-operational and meteorological traffic. Error correcting equipment was added to the duplex radioteletype circuit, Churchill-Coral Harbour. An air-operational teletype circuit in common carrier facilities was commissioned between Dawson, Mayo, and Whitehorse handling both operational and meteorological traffic. A simplex air-operational teletype circuit was commissioned between Great Whale River and Schefferville. A co-ordinate system for providing expanded advisory service from aeradio stations on 122.2Mc/s was instituted to increase safety of flight in uncontrolled airspace.

Public Telecommunications Services

The Canadian National landline system from Hay River to Yellowknife via Enterprise, Providence and Rae, and from Hay River to Fort Smith, was completed in August, and provides limited quality public telephone service to the south. The C.N.T. opened a telephone exchange at Fort Simpson to serve 72 local subscribers, and expanded the Inuvik exchange from 50 to 150 lines.

The C.N.T. high capacity microwave system between Alberta Government Telephones at Grande Prairie and the Alaska Communications System at the border was opened by the Prime Minister on July 22.

Three more circuits in the Polevault system to Frobisher were established for D.O.T. use, into the long distance telephone circuit established for Bell Telephone in 1959.

Plans for 1962

Work will be continued on uncompleted projects, and the following new developments will be begun.

Baker Lake - The new remote combined non-directional beacon/transmitter building will be completed, and a high power non-directional beacon installed, replacing the present low powered beacon.

Banks Island - The remote transmitter building will be completed, and the non-directional beacon and transmitting equipment will be moved there from the operations building.

Cambridge Bay - The high power non-directional beacon already shipped will be installed.

Cape Hopes Advance - The present low frequency direction finder system will be replaced with a new high power non-directional beacon using space available in the existing transmitter building.

Coppermine - Improvements to the water supply and sanitary facilities will be completed. New steel water storage tanks will be supplied, and a steel septic tank system installed.

Coral Harbour - The automatic error correction/multiplex system between Coral Harbour and Frobisher will be commissioned.

Dawson City - A new non-directional beacon will be installed.

Eskimo Point - The installation of the new non-directional beacon will be completed.

Fort Good Hope - Work will begin on the construction of a new non-directional beacon building, a new power house, and a transmission line.

Fort Simpson - The new radio control building to serve telecommunication and meteorological services will be completed by late summer.

Fort Smith - Following propagation investigations, Fort Smith has been chosen as the southern terminus for radio circuits to the north with the advent of landline facilities to the station. The remote transmitter building will be extended to allow installation of additional equipment and new antenna system developed. A remote receiver-radio monitor site is planned.

Frobisher - The remote receiver site may be developed at the former U.S.A.F. site. The equipment for the automatic error correction-multiplex system will be installed as soon as the remote receiver site is available. It is expected that an ILS will be installed.

Inuvik - A new radio teletype system will be installed to replace the existing manual CW circuit with Fort Smith.

Mayo - The transmitters for the new non-directional beacon will be installed.

Norman Wells - A new remote receiver site to improve existing facilities and to accommodate radio teletype circuits will be completed.

Nottingham Island - Negotiations with the U.S.A.F. for relocating the station at Cape Warwick have been completed; a new marine-radio station and a non-directional beacon will be developed.

Whitehorse - An ILS system to serve runway 31L will be completed.

Public Telecommunications Service

Improved equipment will be installed to provide standard quality commercial

service between Yellowknife and Fort Smith and the south.

Alberta Government Telephones will establish a microwave link between Peace River and Hay River, replacing the high frequency circuits now in use.

Commercial telegraph service will be initiated between points on the C.N.T. system and the south.

Alberta Government Telephones will extend service from Fort Smith to Chipewyan and Uranium City.

Four telephones will be installed at Enterprise to connect to Hay River.

Radio telegraph circuits will be established for use by C.N.T. for a public telegraph service between Fort Smith, Inuvik, and Norman Wells. Additional equipment is scheduled to be installed by February 15, 1962 that will enable standard commercial service to be furnished.

The high frequency circuits from Hay River and from Yellowknife to AGT at Peace River are still operating pending establishment by AGT of their proposed microwave link between Peace River and Hay River now estimated to be ready to handle expanded service by April 1st, 1962.

Commercial telegraph service between points on the CNT system in the Northwest Territories and to the outside will be available on April 1st, 1962.

Extension by AGT of service from Fort Smith to Chipewyan and to Uranium City is expected by about mid-July, 1962.

We are also informed that CNT have opened a telephone exchange at Fort Simpson to provide local service for 72 subscribers. CNT are exploring the possibilities of establishing trunk line connections from Fort Simpson to the outside world.

Four telephones are being installed at Enterprise, NWT for connection to Hay River.

CNT also advise that CBC program service into Yellowknife and Fort Smith will not be possible until about May 4th, 1962.

The telephone exchange at Inuvik was expanded from 50 to 150 lines and is in full operation. No new information is available about CNT plans to connect this exchange to the outside. Studies are still underway.

Current departmental plans envisage the establishment by about April 1st, 1962, of radio telegraph circuits for use by CNT for public telegraph service between Fort Smith and Inuvik and Norman Wells. This will facilitate out-station service via commercial means.

The CNT high capacity microwave system between Grande Prairie and the Yukon-Alaska Border was completed on schedule, and was officially opened by the Prime Minister on July 22nd. The system connects with the Alaska Communications System at the Yukon border and with AGT at Grande Prairie.

In addition to the one L.D. telephone circuit established for Bell Telephone operations to Frobisher in 1959, three more circuits in the Pole-vault System were established in December for our use.

We have heard of no new developments concerning a long-standing proposal by the U.S.A.F. that envisaged a rearward link from the DEW Line (Cambridge area) south towards Hay River.

MARINE OPERATIONS BRANCH

Responsibilities

Provisional transportation facilities and co-ordination of cargo and passenger requirements for government agencies; icebreaker assistance wherever and whenever required.

Long-term Plans

Continuing to improve marine work in the north; planning to meet expected additional resupply requirements.

Review of 1961 Operations

The following vessels were engaged in northern transportation:

	<u>Voyage</u>	<u>Cargo in lbs</u>
C.M.S. "Auk"	Montreal - Frobisher Bay	312,481
	Montreal - Saglek	172,563
	Churchill - Baker Lake	1,068,982
	Baker Lake - Churchill	47,465
	Churchill - Baker Lake	1,037,372
	Churchill - Chesterfield	5,341
	Gap-Pine - Lateral	354,700
C.M.S. "Camsell"	Vancouver - Herschel	26,970
C.M.S. "C.D. Howe"	Montreal - Eastern Arctic Ports	1,702,735
	Churchill - " " "	1,267,413
	Wayports - Churchill	29,952
	Wayports	200,000
C.M.S. "d'Iberville"	Montreal - Eastern Arctic Ports	818,621
	Churchill - " " "	2,208,302
	Wayports	99,701
	Clyde River - Frobisher Bay	20,000
C.M.S. "Eider"	Gap-Pine Resupply	4,132,320
	Foxe Resupply	1,454,000
	Churchill - Chesterfield	1,221,265
	Montreal - Labrador Ports & Return	688,943
C.M.S. "Ernest Lapointe"	Montreal - Goose Bay	143,060
C.M.S. "Gannet"	Montreal - Gap-Pine	686,517
	Montreal - Foxe	672,110
	Gap-Pine Lateral	1,441,800

C.M.S. "John A. Macdonald"	Montreal - Eureka	968,305
	NORS - Quebec	638,970
C.M.S. "Labrador"	Halifax - Eastern Arctic Ports	170,463
	Churchill - " " "	30,564
	Wayports	60,000
C.M.S. "Marmot"	Quebec - Frobisher Bay	80,000
	Frobisher Bay - Goose Bay	70,000
	Frobisher Bay - Quebec	11,290
C.M.S. "Mink"	Moosonee - Great Whale & Other Ports	206,265
	Great Whale River - Belcher Island	304,000
	Belcher Islands - Great Whale River	24,650
	Cape Jones - Great Whale River	564,000
	Great Whale River - Moosonee	8,760
	Great Whale River - Povungnetuk	40,000
C.M.S. "Montcalm"	Montreal - Eastern Arctic Ports	836,608
	Churchill - Koartak & Payne Bay	132,897
	Churchill - Eastern Arctic Ports	1,194,939
	Wayports - Churchill	96,169
	Churchill - Pangnirtung	1,062,617
C.M.S. "N.B. McLean"	Montreal - Eastern Arctic Ports	554,311
	Churchill - " " "	1,751,902
	Wayports - Churchill	12,430
	Wayports	150,000
C.M.S. "Puffin"	Montreal - Mid-Canada Line	564,416
	Wayports	4,936,200
	Moosonee - Great Whale River	562,287
	Mid-Canada Line - Montreal	244,000
C.M.S. "Raven"	Montreal - Mid-Canada Line	648,990
	Mid-Canada Line - Churchill	87,120
	Mid-Canada Line Lateral	5,460,890
	Churchill - Wayports	3,106,000
	Great Whale River - Montreal	259,000
C.M.S. "Sir Humphrey Gilbert"	Halifax - (425)	858,928
C.M.S. "Skua"	Gap-Pine Resupply	598,000
	Foxe Basin Resupply	918,000
	Hall Lake - Churchill	50,000
	Churchill - Coral Harbour	995,189
	Gap-Pine Oil Resupply	1,456,000
	Goose Bay - Montreal	390,873

C.M.S. "Wolfe"	Montreal - Goose Bay	286, 121
	Goose Bay - Halifax (10)	20, 000
Total - C.M.S.Ships		50, 223, 767
S.S. "Algerine"	Montreal - Frobisher Bay	84, 000
	Frobisher Bay - Montreal	130, 000
M.V. "Arctic"	Goose Bay - Gap-Pine Sites	25, 094, 000
M.V. "Canuk Trader"	Montreal - Foxe Basin	5, 441, 587
	Foxe Basin - Montreal	818, 621
S.S. "Eastore"	Montreal - Frobisher Bay	184, 000
M.V. "Elmbranch"	Montreal - Resolute Bay	9, 193, 740
M.V. "Eskimo"	Montreal - Baffin	4, 806, 313
	Baffin - Lateral	5, 552, 000
	Baffin - Montreal	501, 517
	Montreal - Frobisher Bay	2, 498, 642
	Frobisher Bay - Montreal	541, 593
S.S. "Farrandoc"	Montreal - Gap-Pine	1, 668, 000
	Gap-Pine Resupply	8, 214, 000
	Labrador Sites	106, 000
S.S. "Federal Pioneer"	Montreal - Resolute	8, 777, 770
	Resolute - Montreal	1, 216, 000
M.V. "Fort Albany"	Montreal - Sugluk & Fort Chimo	783, 856
	Montreal - Sugluk & Povungnetuk	149, 233
	Sugluk - Montreal	33, 11 0
	Fort Chimo - Montreal	112, 460
	Povungnetuk - Montreal	2, 105
	Montreal - Goose Bay	66, 750
M.V. "J. Edouard Simard"	Montreal - Foxe Basin	13, 855, 700
	Gap-Pine Oil Phase Out	9, 016, 560
M.V. "Keta"	Montreal - Great Whale River	150, 000
	Montreal - Port Harrison	892, 011
	Great Whale River - Montreal	164, 000
S.S. "London"	Montreal - Baker Lake	1, 198, 076
	Baker Lake - Montreal	78, 805
	Montreal - Ft. Chimo - Geo. River	556, 947
	Fort Chimo - Montreal	16, 580
	Montreal - Payne Bay	12, 500

S.S. "Manchester Explorer"	Montreal - Fort Chimo	3,040,293
	Fort Chimo - Montreal	154,735
	Montreal - Frobisher & Coral Harbour	2,048,652
M.V. "Maplebranch"	Montreal - Baffin Island	11,269,000
	Churchill - Mid-Canada Line	11,220,677
	Churchill - Great Whale River	3,523,855
	Churchill - Chesterfield	5,563,787
S.S. "Maridan C"	Montreal - Frobisher Bay	842,517
	Montreal - Povungnetak	1,476,585
	Povungnetuk - Montreal	74,300
M.V. "O.K. Service X"	Montreal - Cartwright	72,239
	Montreal - Goose Bay	18,014
	Goose Bay - Montreal	1,100
	Montreal - Goose Bay	124,085
	Montreal - Frobisher Bay	268,298
S.S. "Perla Dan"	Montreal - Thule	2,032,825
M.V. "Swivel"	Montreal - Various	502,000
	Frobisher Bay - Harmon)	
	Frobisher Bay - Montreal)	814,000
	Montreal-Frobisher Bay	110,579
M.V. "Wahcondah"	Frobisher Bay - Resolution Island	220,044
S.S. "Yorkwood"	Montreal - Mid-Canada Line	1,290,000
	Mid-Canada Line - Montreal	806,000
	Montreal - Chesterfield Inlet	144,234
	Montreal - Rankin Inlet	585,958
	Rankin Inlet - Churchill	10,000
	Churchill - Rankin Inlet	450
	Rankin Inlet - Churchill	21,320
	Churchill - Rankin Inlet	44,105
	" "	28,232
	" "	43,370
	Rankin Inlet - Churchill	11,390
Hudson's Bay Co.	Eastern Arctic Ports	3,824,000
	Western Arctic Ports	2,408,000
Arctic Shipping Ltd.	Western Arctic Ports	6,934,000
Northern Transportation Company Ltd.	Western Arctic Ports	8,568,000
TOTAL - Charter Ships		<u>170,013,120</u>
GRAND TOTAL		<u>220,236,887</u>

A cargo was delivered to Thule, Greenland, for the Canadian Army, Department of Transport, and other agencies for transshipment by air to Alert. The Joint Arctic Weather Stations were serviced by a convoy consisting of one dry cargo vessel, one tanker, and three government vessels, with the C.M.S. "John A. Macdonald" carrying supplies to Eureka. Tonnage of freight moved in both the Eastern and Western Arctic in 1961 was slightly in excess of that delivered in 1960. Commercial shipping to Churchill was assisted in and out by icebreakers. The C.M.S. "Labrador" carried out extensive hydrographic and oceanographic work in the far north, and the "John A. Macdonald" reached the highest latitude ever attained by a Canadian vessel when conducting hydrographic work in Nansen Sound and carrying out probes in areas where no hydrographic soundings had been taken. The vessel carrying an oil drilling rig to Winter Harbour was assisted by department vessels.

Plans for 1962

Continued resupply in 1962, with scientific work as required by various government departments.

AIDS TO NAVIGATION DIVISION

Responsibilities

Establishment and maintenance of marine aids to navigation in the Athabasca-Mackenzie water route and in the Western Arctic, in Hudson Strait, Hudson Bay, and Frobisher Bay areas which are being expanded to meet the requirements of shipping.

Long-term Plans

Maintenance, operation and expansion of marine aids is kept under constant review to keep pace with expanding shipping requirements. Continuous participation in the Inter-departmental Engineering Committee co-ordinating the activities of government departments in relation to the Athabasca-Mackenzie water route.

Review of 1961 Operations

In the Eastern Arctic, an engineering study was made to improve aids, to navigation in Hudson Strait and Frobisher Bay, and a program for improvement of radio beacons and lights in this area is being prepared. All established aids were maintained. In the Athabasca-Mackenzie area four working parties during the open season maintained buoys, beacons, and lights, and established additional units. The parties worked in close conjunction with the shipping companies, local pilots, etc. to maintain the aids to mark shipping channels and to place additional cross-over markers and ranges, and buoys. In the Western Arctic additional radar reflector towers were installed from the "Camsell" and existing buoys improved.

Plans for 1962

Equipment has been purchased for a high intensity unattended light unit for Resolution Island and for the improvement of the presently established Dalen lights in Hudson Strait. Plans are being made with the Telecommunications Branch for increased radio beacon service, and active development of an automatic unattended radio beacon with sufficient range for this area is being initiated. A comprehensive engineering study of aids to navigation requirements on the Mackenzie River will be made and co-ordinated with the dredging program of the Department of Public Works. An additional pair of range lights will be placed at Tuktoyaktuk Harbour and additional radar reflector towers established by the "Camsell". Aids already established will be continued in operation in the Eastern and Western Arctic and in the Mackenzie River.

UNEMPLOYMENT INSURANCE COMMISSION

Responsibilities

Administration of the Unemployment Insurance Act, including operation of an employment service through the Commission's local office at Whitehorse, Yukon Territory.

Long-term Plans

Owing to the increasing extent to which Eskimos are being employed in mining and other insurable employment, the extension of unemployment insurance coverage to them is under study.

Review of 1961 Operations

Through the Whitehorse Office, 1,437 placements were made. Of these 1,313 were of workers within the area and 124 of workers transferred from other areas. There were 2,776 claims for unemployment insurance benefit and the amount paid totalled \$471,036.

On behalf of the Commission, the agent who served in Dawson completed 145 benefit claims and the agent in Yellowknife completed 135 claims.

Plans for 1962

Normal operation of the current employment and unemployment insurance services.

UNCLASSIFIED

GOVERNMENT EMPLOYEES IN THE NORTHWEST TERRITORIES AND THE YUKON TERRITORY

DEPARTMENT OR AGENCY	NUMBER OF EMPLOYEES			LOCATION OF FULL-TIME EMPLOYEES				TOTAL	
	Full Time	Seas- onal	Part Time	Northwest Territories			Yukon Terr.		
				TOTAL	Q.E., Rest of Isl. Frankl.	Mack- enzie			
Agriculture	17	15	16	48	-	-	6	11	17
Air Transport Board	-	-	-	-	-	-	-	-	-
Cdn. Broadcasting Corp.	30	-	20	50	-	4	17	9	30
Central Mortgage & Housing	-	-	-	-	-	-	-	-	-
Citizenship & Immigration -									
Immigration	1	-	-	1	-	-	-	1	1
Indian Affairs	55	6	-	61	-	-	22	33	55
Total for Department	56	6	-	62	-	-	22	34	56
Crown Assets Disp. Corp.	-	2	-	2	-	-	-	-	-
Dominion Bureau of Statistics	-	-	25	25	-	-	-	-	-
Eldorado Mining	2	-	-	2	-	-	2	-	2
External Affairs	-	-	-	-	-	-	-	-	-
Fisheries -									
Conservation, Development & Inspection Services	14	4	1	19	-	-	12	2	14
Fisheries Research Board	2	21	-	23	-	-	2	-	2
	16	25	1	42	-	-	14	2	16

DEPARTMENT

NUMBER OF EMPLOYEES

LOCATION OF FULL-TIME EMPLOYEES

OR

AGENCY

Full Time
Seas-
onal
Part
Time
TOTAL
Northwest Territories
Q.E. Rest of
Isl. Frankl. watin enzie
Yukon
Terr.
TOTAL
REMARKS

Forestry	4	2	-	6	-	-	4	-	4
Justice	14	-	-	14	-	-	6	8	14
Labour	-	-	-	-	-	-	-	-	-
<u>Mines & Technical Surveys</u>									
Dominion Observatories	6	16	2	24	5	-	1	-	6
Geographical Branch	-	17	-	17	-	-	-	-	-
Geological Survey	4	60	6	70	-	-	-	-	-
Mines Branch	-	-	-	-	-	-	-	-	-
Polar Continental Shelf Project	-	64	20	84	-	-	-	-	-
Surveys & Mapping Br.	-	272	-	272	-	-	-	-	-
Interdept. Cttee. on Air Surveys									
	-	-	-	-	-	-	-	-	-
Oceanographic Research									
	10	3	-	13	-	4	6	-	10
Total for Department	20	432	28	480	5	4	7	-	16
<u>National Defence -</u>									
Navy	133	16	-	149	22	15	-	96	113
Army	1969	339	170	2478	-	-	840	-	1129
Air Force	381	315	52	748	77	15	-	5	284
Defence Research Board	1	-	6	7	1	-	-	-	1
Total for Department	2484	670	228	3382	100	30	840	101	1413
									2484

- Does not include
cres of 45 on
chartered vessels.

- Work done under
contract.

Total for Department

DEPARTMENT OR AGENCY	NUMBER OF EMPLOYEES			LOCATION OF FULL-TIME EMPLOYEES				REMARKS
	Full Time	Seasonal	Part Time	TOTAL	Northwest Territories Q.E. Rest of Kee- Mack- Isl. Frankl. watin enzie	Yukon Terr.	TOTAL	
National Film Board								
National Health & Welfare								
Health	301	84	41	426	-	-	-	
Welfare	-	-	-	-	35	4	149	301
National Research Council	1	3	1	5	-	-	1	1
National Revenue								
Customs and Excise	16	-	1	17	-	1	1	17
Taxation	4	-	-	4	-	-	-	4
Total for Department	20	-	1	21	-	-	1	21
Northern Affairs & Nat'l Resources								
Cdn. Wildlife Service	3	-	1	4	-	-	4	4
Nat'l Museum of Canada	3	3	-	6	-	1	-	3
Northern Administration Branch								
Administrator of Arctic	168	-	-	168	2	129	37	-
Administrator of Mackenzie								168) Includes teacher) engineers, etc., 561) in the field.
Administrator of Yukon	505	56	-	561	-	17	6	2
	48	8	1	57	-	-	-	57) In Yukon Civil Service only.
Education Division	43	-	-	43	-	-	-	-
Engineering Division	46	-	-	46	-	-	-	-
Industrial Division	33	-	-	33	-	-	-	-) These positions -) are on Head- quarters establish-
Territorial Division	41	-	-	41	-	-	-	ment & make only periodic visits to the North.

DEPARTMENT OR AGENCY

NUMBER OF EMPLOYEES

LOCATION OF FULL-TIME EMPLOYEES

Full Time onl
Seas-
onal
Part
Time
TOTAL
Q.E.
Isl.
Rest of
Frankl.
watin
enzie
Northwest Territories
Kee-
Mack-
Terr.

REMARKS

Northern Affairs and Nat'l

Resources (Cont'd) -

Northern Administration

Branch (Cont'd) -

Resources Division 47

Welfare Division 22

Northern Administration

Branch

Total

Northern Co-ordination

& Research Centre

Total for Department

Northern Canada Power

Commission

Northern Transportation

Company

Post Office -

Under CSC:

Under POD:

Total for Department

Public Works

R.C.M. Police -

Uniformed Members

Civilians

Civil Servants

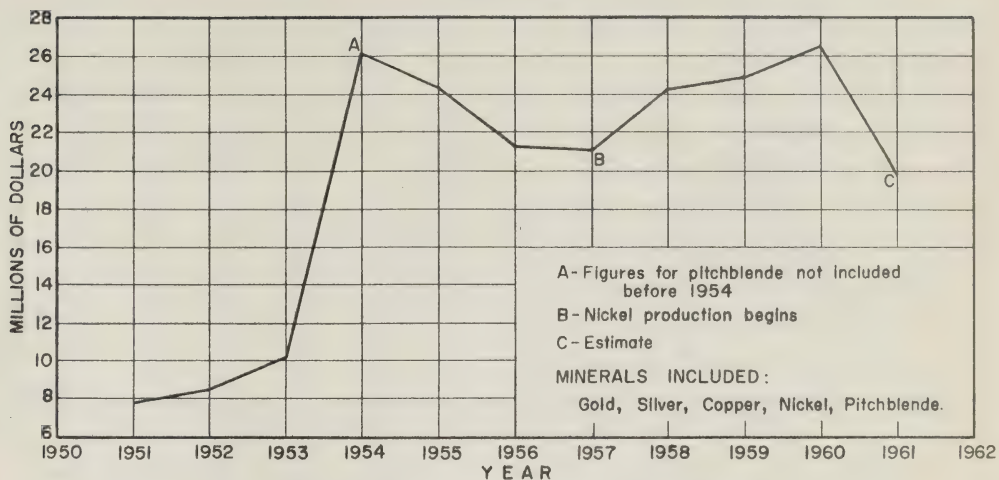
* 26 * The totals for the
Post Office Dept. and
N.R.C. have not been
broken down.

DEPARTMENT
OR
AGENCY
NUMBER OF EMPLOYEES
LOCATION OF FULL-TIME EMPLOYEES
REMARKS

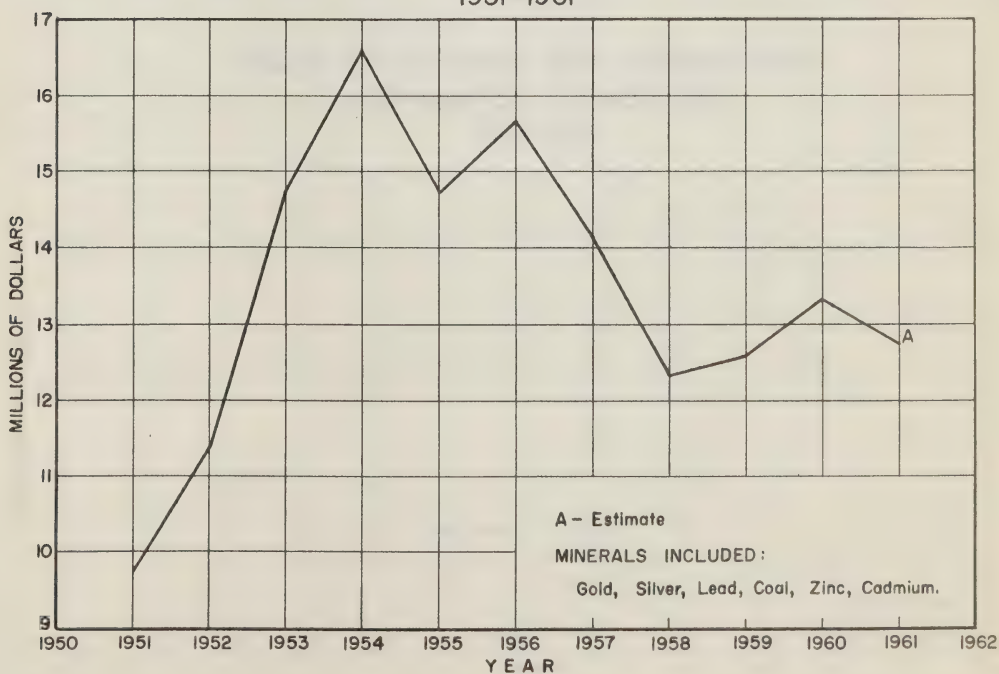
Full Time
Seas-
onal
Part
Time
TOTAL
Northwest Territories
Q.E. Rest of Kee- Mack-
Isl. Frankl. watin enzie
Yukon
Terr.
TOTAL

Total for Department	179	-	15	194	9	23	15	80	52	179	
Transport -											
Air Services	600	134	-	734	36	206	42	182	134	600	
Marine Services	4	690	140	834	-	2	2	-	-	4	
Total for Department	604	824	140	1568	36	208	44	182	134	604	
Unemployment Ins. Comm.	8	-	-	8	-	-	-	-	8	8	
Total 1961	4969	2537	615	8121	153	462	953	1227	1913	4812	
Total 1960	3199	2332	765	6296	139	404	111	1227	1318	3199	
Difference	+1770	+205	+150	+1825	14	58	842	-	595	613	

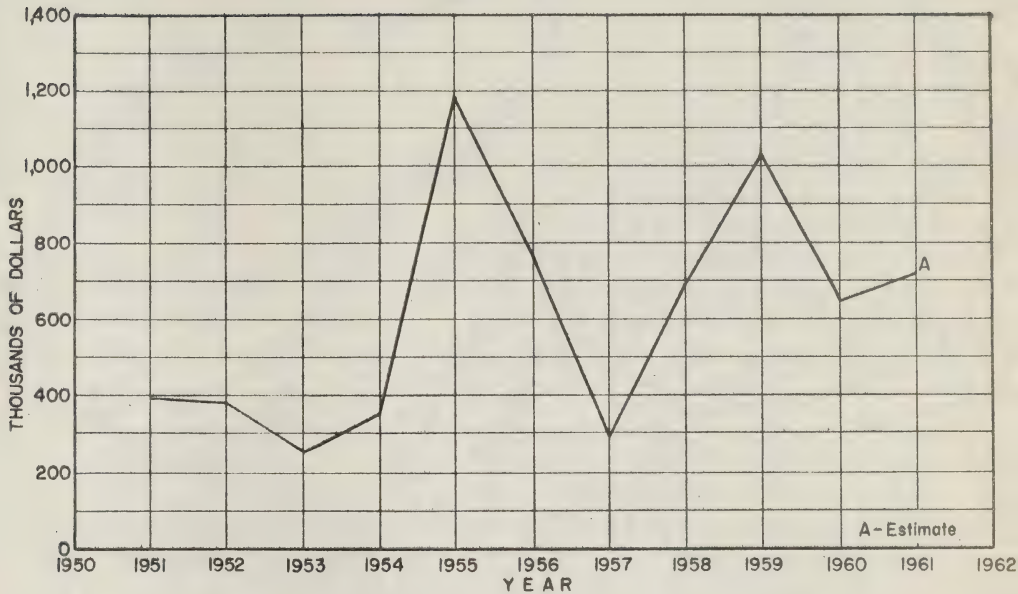
VALUE OF MINERAL PRODUCTION NORTHWEST TERRITORIES 1951-1961



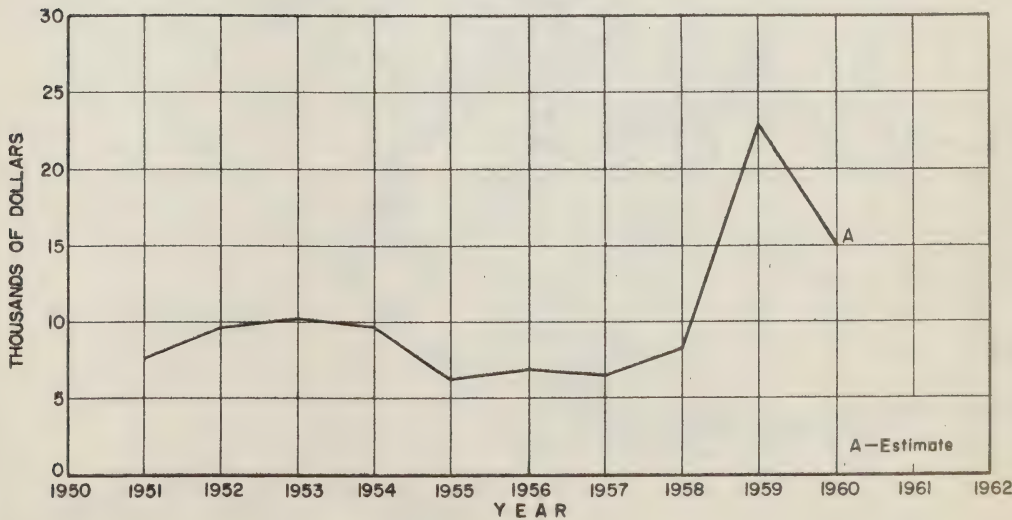
VALUE OF MINERAL PRODUCTION YUKON TERRITORY 1951-1961

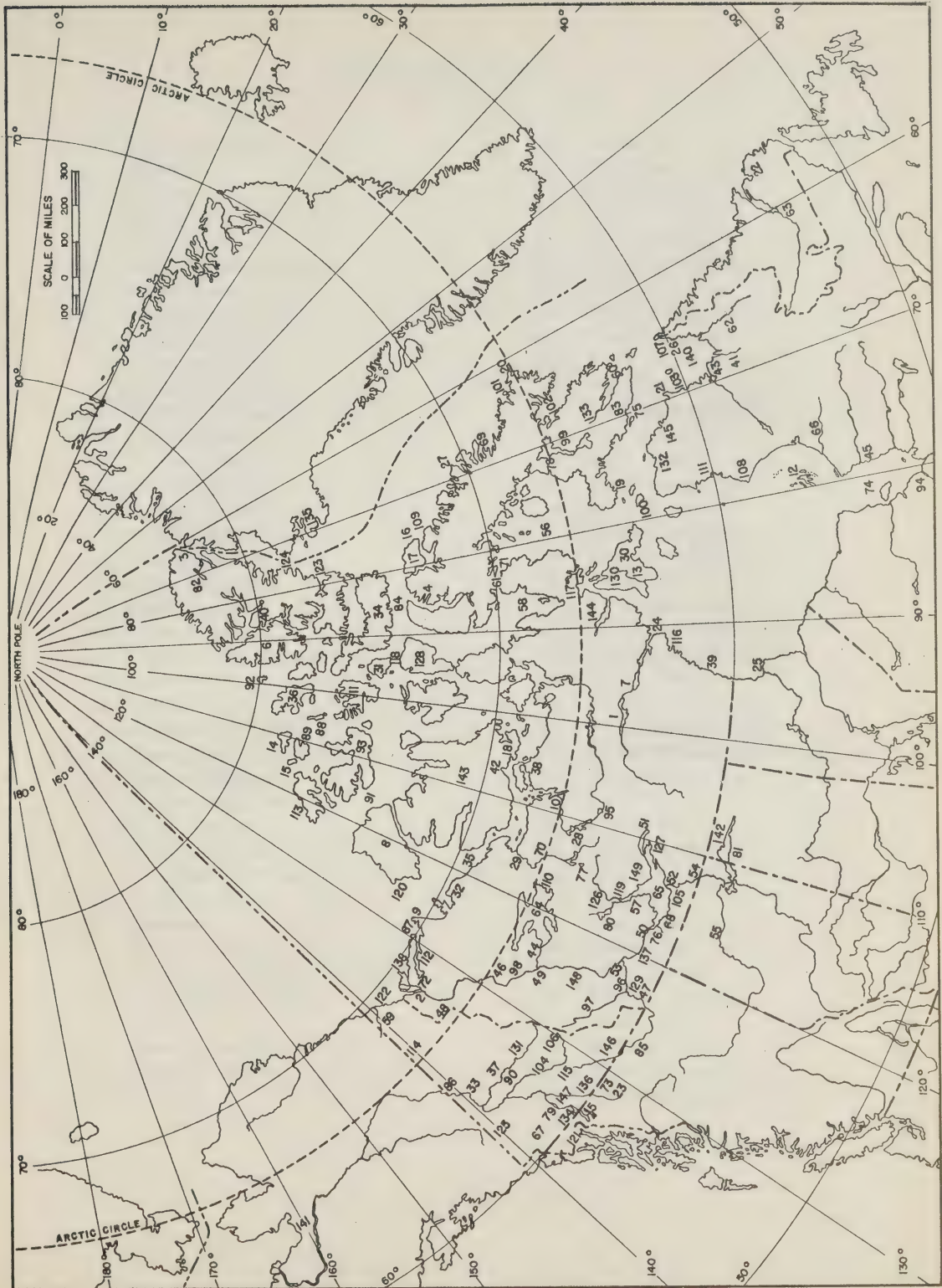


VALUE OF CRUDE PETROLEUM
NORTHWEST TERRITORIES
1951-1961



VALUE OF NATURAL GAS PRODUCTION
NORTHWEST TERRITORIES
1951-1960





PLACE NAMES LIST

- | | |
|------------------------------|---------------------------|
| 1. Aberdeen Lake | 41. False River |
| 2. Aklavik | 42. Ferguson Lake |
| 3. Alert | 43. Fort Chimo |
| 4. Arctic Bay | 44. Fort Franklin |
| 5. Atlin Lake | 45. Fort George |
| 6. Axel Heiberg Island | 46. Fort Good Hope |
| 7. Baker Lake | 47. Fort Liard |
| 8. Banks Island | 48. Fort Macpherson |
| 9. Bathurst Cape | 49. Fort Norman |
| 10. Bathurst Inlet | 50. Fort Providence |
| 11. Bathurst Island | 51. Fort Reliance |
| 12. Belcher Island | 52. Fort Resolution |
| 13. Boas River | 53. Fort Simpson |
| 14. Borden Island | 54. Fort Smith |
| 15. Brock Island | 55. Fort Vermilion |
| 16. Button Point | 56. Foxe Basin |
| 17. Bylot Island | 57. Frank Channel |
| 18. Cambridge Bay | 58. Franklin Bay |
| 19. Cape Christian | 59. Firth River |
| 20. Cape Dorset | 60. Frobisher Bay |
| 21. Cape Dyer | 61. Fury and Helca Strait |
| 22. Cape Hopes Advance | 62. George River |
| 23. Cartwright | 63. Goose Bay |
| 24. Cassier | 64. Great Bear Lake |
| 25. Chesterfield Inlet | 65. Great Slave Lake |
| 26. Churchill | 66. Great Whale River |
| 27. Coates Inlet | 67. Haines Junction |
| 28. Contwoyto Lake | 68. Hay River |
| 29. Coppermine | 69. Home Bay |
| 30. Coral Harbour | 70. Husky Lakes |
| 31. Cornwallis Island | 71. Igloodik |
| 32. Darnley Bay | 72. Inuvik |
| 33. Dawson | 73. Iron Creek |
| 34. Devon Island | 74. James Bay |
| 35. Dolphin and Union Strait | 75. Juet Island |
| 36. Ellef Ringnes Island | 76. Kakisa River |
| 37. Elsa | 77. Knob Lake |
| 38. Enterprise Cape | 78. Koukdjuak River |
| 39. Eskimo Point | 79. Laberge Lake |
| 40. Eureka | 80. Lac La Martre |

81. Lake Athabasca
82. Lake Hazen
83. Lake Harbour
84. Lancaster Sound
85. Liard River
86. Little Gold Creek
87. Liverpool Bay
88. Lougheed Island
89. Mackenzie King Island
90. Mayo
91. McClure Strait
92. Meighen Island
93. Melville Island
94. Moosonee
95. Muskox Lake
96. Nahanni Butte
97. Nahanni River
98. Norman Wells
99. Nettilling Lake
100. Nottingham Island
101. Padloping Island
102. Pangnirtung
103. Payne Bay
104. Pelly R
105. Pine Point
106. Pleasant Camp
107. Port Burwell
108. Port Harrison
109. Pond Inlet
110. Port Radium
111. Povungnituk
112. Ptarmigan Point
113. Prince Patrick Island
114. Old Crow
115. Quiet Lake
116. Rankin Inlet
117. Repulse Bay
118. Resolute
119. Rae

120. Sachs Harbour
121. Skagway
122. Shingle Point
123. Smith Bay
124. Smith Sound
125. Snag
126. Snare River
127. Snowdrift
128. Somerset Island
129. South Nahanni
130. Southampton Island
131. Stewart River
132. Sugluk
133. Sylvia Grinnell River
134. Tagish
135. Thule
136. Teslin
137. Trout Rock
138. Toktoyaktuk
140. Ungava Bay
141. Unalakleet
142. Uranium City
143. Victoria Island
144. Wager Bay
145. Wakeham Bay
146. Watson Lake
147. Whitehorse
148. Wrigley
149. Yellowknife

LIST OF PLACE NAMES - BY DEPARTMENT -

Advisory Committee on Northern Development - None
Agriculture 33, 41, 43, 53, 55, 72, 82, 85, 141, 142, 147
Air Transport Board - None
Canadian Broadcasting Corporation 24, 33, 37, 54, 58, 63, 67, 68, 90, 142,
146, 147, 149
Central Mortgage and Housing Corporation 20, 147
Citizenship and Immigration
 Indian Affairs 2, 33, 44, 46, 47, 48, 50, 52, 53, 54, 65, 80, 112, 119,
 127, 136, 137, 147
 Immigration - General
Crown Assets Disposal Corporation - None
Dominion Bureau of Statistics - General
Eldorado Mining and Refining Limited 110
External Affairs SECRET - None
Department of Fisheries
 Conservation, Development, and Inspection Services 8, 18, 27, 32, 40, 42,
 Research Board of Canada 58, 65, 68, 69, 70, 79,
 87, 101, 107, 115, 118,
 130, 133, 136, 138, 140
Forestry 65, 85, 97, 104, 131, 146
Justice - None
Labour - None
Mines and Technical Surveys
 Dominion Observatories 3, 7, 29, 60, 118
 Geographical Branch 14, 17, 36, 92
 Geological Survey - General
 Mines Branch 10, 51, 142, 144, 146
 Polar Continental Shelf Project - General
 Surveys and Mapping Branch 3, 5, 18, 20, 21, 26, 29, 34, 36, 38, 57, 60,
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 Air Force
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National Film Board 20, 33, 72, 116, 118, 121, 147
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 Welfare - None

National Research Council 72

National Revenue

Customs and Excise 3, 7, 18, 24, 29, 30, 39, 40, 43, 60, 72, 83,
86, 102, 109, 106, 114, 118, 120, 125, 138

Taxation Division - None

Northern Affairs and National Resources

Canadian Wildlife Service 1, 13, 19, 78, 99

National Museum of Canada 1, 9, 16, 31, 34, 35, 46, 59, 75, 122

National Parks - General

Historic Sites - 33

Council of the Northwest Territories - General

Council of the Yukon Territory - General

Northern Administration Branch

Administrator of the Arctic 7, 12, 20, 26, 30, 39, 43, 60, 66, 71,
72, 103, 104, 108, 111, 116, 132

Administrator of the Mackenzie 50, 54, 104, 138 - General

Education Division - General

Engineering 29, 43, 46, 49, 50, 108, 119, 135 - General

Industrial Division 2, 33, 43, 60, 62, 72, 105, 107, 111, 140

Northern Welfare Service 2, 7, 18, 26, 54, 58, 72, 149 - General

Resources Division 72, General

Northern Co-ordination and Research Centre - General

Northern Canada Power Commission 48, 52, 53, 54, 60, 72, 90, 126, 147

Northern Transportation Company Limited - General

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Public Works 25, 26, 29, 39, 43, 45, 54, 60, 68, 72, 102, 125, 147, 149 -
General

Royal Canadian Mounted Police 7, 18, 25, 33, 39, 54, 72, 116, 138

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Construction Branch 7, 18, 25, 28, 30, 39, 52, 53, 58, 68, 72, 98,
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Meteorological Branch 3, 18, 21, 26, 40, 54, 60, 72, 118


Telecommunications Branch 7, 8, 18, 22, 25, 29, 30, 33, 38, 39, 46,
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Government
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1961

Canada. Advisory Committee
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Government activities
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